

=> d his ful

(FILE 'HOME' ENTERED AT 08:09:01 ON 17 DEC 2008)

FILE 'HCAPLUS' ENTERED AT 08:09:47 ON 17 DEC 2008

L1 1 SEA ABB=ON PLU=ON US20060289364/PN  
D L1 ALL  
L2 806 SEA ABB=ON PLU=ON ?BALLAST? (3A) ?WATER?

FILE 'HCAPLUS, WPIX, JAPIO, PASCAL' ENTERED AT 08:13:21 ON 17 DEC 2008

L3 806 SEA ABB=ON PLU=ON ?BALLAST? (3A) ?WATER?  
L4 2020 SEA ABB=ON PLU=ON ?BALLAST?/BI,ABEX (3A) ?WATER?/BI,ABE  
X  
L5 592 SEA ABB=ON PLU=ON ?BALLAST? (3A) ?WATER?  
L6 268 SEA ABB=ON PLU=ON ?BALLAST? (3A) ?WATER?  
TOTAL FOR ALL FILES  
L7 3686 SEA ABB=ON PLU=ON L2

FILE 'REGISTRY' ENTERED AT 08:15:05 ON 17 DEC 2008

L8 1 SEA ABB=ON PLU=ON 7722-84-1/RN

FILE 'REGISTRY' ENTERED AT 08:20:59 ON 17 DEC 2008

E FERROUS ION/CN  
L9 1 SEA ABB=ON PLU=ON "FERROUS ION"/CN  
L10 1 SEA ABB=ON PLU=ON 7720-78-7  
L11 1 SEA ABB=ON PLU=ON 79-21-0  
L12 1 SEA ABB=ON PLU=ON 7553-56-2  
L13 1 SEA ABB=ON PLU=ON 9001-05-2  
L14 1 SEA ABB=ON PLU=ON 7681-11-0  
E "FENTON'S REAGENT"/CN  
E PEROXIDE/CN  
L15 1 SEA ABB=ON PLU=ON PEROXIDE/CN  
E PERBORATE/CN  
L16 1 SEA ABB=ON PLU=ON PERBORATE/CN  
E PERCARBONIC/CN  
L17 1 SEA ABB=ON PLU=ON "PERCARBONIC ACID"/CN  
E PERCARBONATE/CN  
E SODIUM PERCARBONATE/CN  
L18 3 SEA ABB=ON PLU=ON "SODIUM PERCARBONATE"/CN  
E PERCOXYSULFURIC/CN  
E PEROXYSULFURIC/CN  
L19 1 SEA ABB=ON PLU=ON "PEROXYSULFURIC ACID"/CN  
E PERACETIC/CN  
L20 1 SEA ABB=ON PLU=ON "PERACETIC ACID"/CN

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E FERROUS/CN
E IODIDE/CN
L21      1 SEA ABB=ON  PLU=ON  IODIDE/CN

FILE 'HCAPLUS' ENTERED AT 09:12:29 ON 17 DEC 2008
L22      230980 SEA ABB=ON  PLU=ON  H2O2 OR HYDROGEN#(W)PEROXIDE# OR L11
OR L15 OR L8 OR L16 OR L17 OR L18 OR L19 OR L20
L23      359781 SEA ABB=ON  PLU=ON  ?IODIDE? OR ?IODINE? OR L21 OR L12
OR L14
D L23 1-10 KWIC
D L23 50-60 KWIC
L24      7184 SEA ABB=ON  PLU=ON  (FERROUS# OR "FE+2") (2A) ION#
D L24 1-10 KWIC
L25      37255 SEA ABB=ON  PLU=ON  L24 OR L9 OR L10
D L25 1-10 KWIC
L26      14731 SEA ABB=ON  PLU=ON  "2+FE" OR "FE+2"
L27      51271 SEA ABB=ON  PLU=ON  (L24 OR L25 OR L26)
D L27 15-25 KWIC
L28      53906 SEA ABB=ON  PLU=ON  L13 OR ?CATALASE? OR ?CATALAZE?
L29      30 SEA ABB=ON  PLU=ON  L2 AND L22
L30      1 SEA ABB=ON  PLU=ON  L29 AND L23
D SCA
E SHIP# OR BOAT# OR SUBMARINE#
L31      40701 SEA ABB=ON  PLU=ON  SHIP# OR BOAT# OR SUBMARINE#
L32      299 SEA ABB=ON  PLU=ON  L31 AND L22
L33      11 SEA ABB=ON  PLU=ON  L32 AND L23
L34      4 SEA ABB=ON  PLU=ON  L33 AND L27
L35      1 SEA ABB=ON  PLU=ON  L34 AND L28
D SCA
L36      5 SEA ABB=ON  PLU=ON  L22 AND L23 AND L27 AND L28
D L36 1-5 KWIC

FILE 'WPIX, JAPIO, PASCAL' ENTERED AT 09:28:05 ON 17 DEC 2008
L37      45934 SEA ABB=ON  PLU=ON  L22 OR ?FENTON?/BI,ABEX (W) ?REAGENT?
/BI,ABEX
L38      9757 SEA ABB=ON  PLU=ON  L22 OR ?FENTON? (W) ?REAGENT?
L39      24527 SEA ABB=ON  PLU=ON  L22 OR ?FENTON? (W) ?REAGENT?
TOTAL FOR ALL FILES
L40      80218 SEA ABB=ON  PLU=ON  L22 OR ?FENTON? (W) ?REAGENT?
L41      1 SEA ABB=ON  PLU=ON  L37 AND L23 AND L27 AND L28
L42      0 SEA ABB=ON  PLU=ON  L38 AND L23 AND L27 AND L28
L43      0 SEA ABB=ON  PLU=ON  L39 AND L23 AND L27 AND L28
TOTAL FOR ALL FILES
L44      1 SEA ABB=ON  PLU=ON  L40 AND L23 AND L27 AND L28
D SCA L44

FILE 'HCAPLUS' ENTERED AT 09:30:48 ON 17 DEC 2008

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L45 231393 SEA ABB=ON PLU=ON L22 OR ?FENTON? (W) ?REAGENT?  
 L46 7806 SEA ABB=ON PLU=ON L45 AND L23  
 L47 120 SEA ABB=ON PLU=ON L46 AND L27  
 L48 5 SEA ABB=ON PLU=ON L47 AND L28  
 L49 4 SEA ABB=ON PLU=ON L47 AND ?PEPTIDE?  
     D L49 1-4 KWIC  
 L50 1 SEA ABB=ON PLU=ON L47 AND L2  
 L51 4 SEA ABB=ON PLU=ON L47 AND L31  
     D L51 1-4 KWIC  
     SET LINE 250  
     SET DETAIL OFF  
     E BIOFOULING+ALL/CT  
     SET LINE LOGIN  
     SET DETAIL LOGIN  
     E (BIOFOULING OR "FOULING" (L) "BIOFOULING")  
     SET LINE 250  
     SET DETAIL OFF  
     E BIOFOULING+ALL/CT  
     SET LINE LOGIN  
     SET DETAIL LOGIN  
 L52 3657 SEA ABB=ON PLU=ON (BIOFOULING OR "FOULING" (L)  
     "BIOFOULING")  
 L53 1 SEA ABB=ON PLU=ON L47 AND L52  
     D SCA  
 L54 3 SEA ABB=ON PLU=ON L2 AND L28  
     D SCA  
     SET LINE 250  
     SET DETAIL OFF  
     E WATER TREATMENT+ALL/CT  
     SET LINE LOGIN  
     SET DETAIL LOGIN  
 L55 186531 SEA ABB=ON PLU=ON (WATER TREATMENT OR "WATER PURIFICATI  
     ON")  
 L56 100 SEA ABB=ON PLU=ON L55 AND L28  
 L57 44 SEA ABB=ON PLU=ON L56 AND (L45 OR L23 OR L27)  
 L58 2 SEA ABB=ON PLU=ON L56 AND L45 AND (L23 OR L27)  
     D SCA  
     D L36 1-5 KWIC  
 L59 4 SEA ABB=ON PLU=ON L54 OR L58  
     D L57 1-10 KWIC  
 L60 23 SEA ABB=ON PLU=ON L57 AND PY<=2005 NOT P/DT  
 L61 16 SEA ABB=ON PLU=ON L57 AND (PRD<=20050617 OR AD<=2005061  
     7 OR AY<=20050617) AND P/DT  
 L62 39 SEA ABB=ON PLU=ON L60 OR L61

FILE HOME

FILE HCAPLUS

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FILE COVERS 1907 - 17 Dec 2008 VOL 149 ISS 25

FILE LAST UPDATED: 16 Dec 2008 (20081216/ED)

HCAplus now includes complete International Patent Classification (I) reclassification data for the third quarter of 2008.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

FILE WPIX

FILE LAST UPDATED: 12 DEC 2008 <20081212/UP>

MOST RECENT UPDATE: 200880 <200880/DW>

DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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>>> IPC Reform backfile reclassifications have been loaded to end of September 2008. No update date (UP) has been created for the reclassified documents, but they can be identified by 20060101/U and 20061231/UPIC, 20070601/UPIC, 20071001/UPIC, 20071130/UPIC, 20080401/UPIC, 20080701/UPIC and 20081001/UPIC. ECLA reclassifications to mid August and US national classification mid September 2008 have also been loaded. Update dates 20080401, 20080701 and 20081001/UPIC and /UPNC have been assigned to these

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<http://scientific.thomsonreuters.com/support/patents/coverage/latest>

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[http://www.stn-international.com/DWPIAnaVist2\\_0608.html](http://www.stn-international.com/DWPIAnaVist2_0608.html)

>>> HELP for European Patent Classifications see HELP ECLA, HELP ICO

FILE JAPIO

FILE LAST UPDATED: 27 NOV 2008 <20081127/UP>  
MOST RECENT PUBLICATION DATE: 28 AUG 2008 <20080828/PD>

>>> GRAPHIC IMAGES AVAILABLE <<<

FILE PASCAL

FILE LAST UPDATED: 15 DEC 2008 <20081215/UP>  
FILE COVERS 1977 TO DATE.

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION IS AVAILABLE  
IN THE BASIC INDEX (/BI) FIELD <<<

FILE REGISTRY

Property values tagged with IC are from the ZIC/VINITI data file  
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DICTIONARY FILE UPDATES: 15 DEC 2008 HIGHEST RN 1084993-68-9

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on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

FILE STNGUIDE

FILE CONTAINS CURRENT INFORMATION.  
LAST RELOADED: Dec 12, 2008 (20081212/UP).

=> d 136 1-5 bib abs hitind

L36 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2008:474518 HCAPLUS Full-text

DN 148:434268

TI Peroxide-producing enzymes and peroxidase compositions for the treatment of vaginal diseases

IN Pellico, Michael; Atwal, Rajvinder Kaur

PA Laclede, Inc., USA

SO PCT Int. Appl., 83pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	
PI	WO 2008045696	A2	20080417	WO 2007-US79840	20070928
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	US 2006-828933P	P	20061010		

AB A therapeutic composition for vaginal administration based on the generation of a biocidal anion by an enzymic reaction catalyzed by a peroxidase. The peroxide utilized by the peroxidase enzyme can be endogenous or can be generated by the action of an oxidase enzyme on a suitable substrate. Therapeutic compns. according to the present invention are useful for the treatment of vaginal diseases and conditions, including bacterial and fungal infections. Formulations contain, e.g., water, glycerol, CM cellulose, caprylic/capri triglycerides, lactoperoxidase, myeloperoxidase, glucose oxidase and Na phosphate.

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 7

IT 50-23-7, Hydrocortisone 50-24-8, Prednisolone 50-70-4, Sorbitol, biological studies 50-81-7D, Ascorbic acid, salts 53-03-2,

Prednisone 56-81-5, Glycerol, biological studies 57-55-6, Propylene glycol, biological studies 83-43-2, Methylprednisolone 110-27-0, Isopropyl myristate 112-10-7, Isopropyl stearate 124-94-7, Triamcinolone 134-03-2, Sodium ascorbate 137-66-6, Ascorbyl palmitate 333-20-0, Potassium thiocyanate 593-29-3, Potassium stearate 822-16-2, Sodium stearate 1592-23-0, Calcium stearate 3385-03-3, Flunisolide 3416-24-8, Glucosamine 4419-39-0, Beclomethasone 5743-27-1, Calcium ascorbate 7439-89-6D, Iron, salts 7512-17-6, N-Acetylglucosamine 7632-05-5, Sodium phosphate 7681-11-0, Potassium iodide, biological studies 7720-78-7, Ferrous sulfate 7758-94-3, Ferrous chloride 7783-86-0, Ferrous iodide 9000-11-7, Cm cellulose 9001-63-2, Lysozyme 9004-99-3, Polyethylene glycol stearate 9033-79-8, Acrylic acid-sodium acrylate copolymer 10233-13-3, Isopropyl laurate 11138-66-2, Xanthan gum 15421-15-5, Potassium ascorbate 24800-44-0, Tripropylene glycol 25265-71-8, Dipropylene glycol 25322-68-3, Peg 248474-30-8, Poly(glyceryl methacrylate) 51333-22-3, Budesonide 90566-53-3, Fluticasone 126544-47-6, Ciclesonide 322645-84-1, Polawax NF  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(peroxide-producing enzymes and peroxidase compns. for the treatment of vaginal diseases)

IT 7722-84-1, Hydrogen peroxide, biological studies 9000-88-8, D-Amino acid oxidase 9001-05-2, Catalase 9001-37-0, Glucose oxidase 9002-12-4, Urate oxidase 9003-99-0, Peroxidase 9013-66-5, Glutathione peroxidase 9028-67-5, Choline oxidase 9028-71-1, Glycolic oxidase 9028-79-9, Galactose oxidase 9055-15-6, Oxidoreductase 9059-11-4, Amine oxidase 9073-63-6, Alcohol oxidase 37250-81-0, L-Sorbose oxidase 37255-41-7, D-Glutamate oxidase 39307-16-9, Glycine oxidase  
 RL: TEM (Technical or engineered material use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(peroxide-producing enzymes and peroxidase compns. for the treatment of vaginal diseases)

L36 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2006:101276 HCAPLUS Full-text  
 DN 144:156118  
 TI Method for treating ship ballast water  
 IN Wakao, Yoshiharu; Tabuchi, Takuro; Mizumori, Takashi  
 PA Katayama Chemical Inc., Japan  
 SO PCT Int. Appl., 23 pp.  
 CODEN: PIXXD2

DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	
PI	WO 2006011315	A1	20060202	WO 2005-JP11167	20050617
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
AU	2005256100	A1	20060302	AU 2005-256100	20050617
EP	1671932	A1	20060621	EP 2005-751319	20050617
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
US	20060289364	A1	20061228	US 2006-567682	20060209
PRAI	JP 2004-224403	A	20040730		
	JP 2004-242422	A	20040823		
	WO 2005-JP11167	W	20050617		
AB	A method for treating ship ballast H <sub>2</sub> O, comprises adding, to ship ballast H <sub>2</sub> O, H <sub>2</sub> O <sub>2</sub> or a H <sub>2</sub> O <sub>2</sub> generating compound in such an amount that gives a H <sub>2</sub> O <sub>2</sub> concentration of 10-500 mg/L and ≥1 member selected from a ferrous ion or a ferrous ion supply compound in such an amount that gives ferrous ion concentration of 0.1-400 mg/L, catalase in such an amount that gives a catalase concentration of 0.5-2500 units/L, and I or an I supply compound in such an amount that gives an I concentration of 0.1-100 mg/L, thereby exterminating organisms in the ballast H <sub>2</sub> O.				
IC	ICM C02F001-50				
	ICS B63B013-00; C02F001-72; C02F001-76				

CC 61-5 (Water)  
ST ship ballast water purifn organism catalase iodine  
IT 79-21-0, Peroxy acetic acid 7553-56-2,  
Iodine, uses 7681-11-0, Potassium iodide  
, uses 7720-78-7, Ferrous sulfate 7722-84-1,  
Hydrogen peroxide, uses 9001-05-2,  
Catalase  
RL: NUU (Other use, unclassified); TEM (Technical or engineered  
material use); USES (Uses)  
(method for treating ship ballast water)  
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:215259 HCAPLUS Full-text

DN 139:52592

TI Determination of •OH, O<sub>2</sub>•-, and Hydroperoxide Yields in  
Ozone Reactions in Aqueous Solution

AU Flyunt, Roman; Leitzke, Achim; Mark, Gertraud; Mvula, Eino; Reisz,  
Erika; Schick, Roland; von Sonntag, Clemens

CS Max-Planck-Institut fuer Strahlenchemie, Muelheim an der Ruhr,  
D-45413, Germany

SO Journal of Physical Chemistry B (2003), 107(30), 7242-7253  
CODEN: JPCBFK; ISSN: 1520-6106

PB American Chemical Society

DT Journal

LA English

OS CASREACT 139:52592

AB In ozone reactions in aqueous solns., •OH and O<sub>2</sub>•- are often  
generated as short-lived intermediates and hydroperoxides are formed  
as labile or stable final products. Tertiary butanol reacts with  
ozone only very slowly but readily with •OH. In the presence of  
dioxxygen, formaldehyde is a prominent final product, 30 ± 4%, whose  
ready determination can be used as an assay for •OH. Although DMSO  
reacts much more readily with ozone, its fast reaction with •OH which  
gives rise to methanesulfinic acid can also be applied for the  
determination of •OH, at least in fast ozone reactions. The  
formation of O<sub>2</sub>•- can be assayed with tetranitromethane (TNM), which  
yields nitroform anion (NF<sup>-</sup>) at close to diffusion-controlled rates.  
TNM is stable in neutral and acid solution but hydrolyzes in basic  
solution (k = 2.7 M<sup>-1</sup> s<sup>-1</sup>), giving rise to NF<sup>-</sup> plus nitrate ion (62%)  
and CO<sub>2</sub> plus 4 nitrite ions (38%). TNM reacts with O<sub>3</sub> (k = 10 M<sup>-1</sup> s<sup>-1</sup>),  
yielding 4 mol of nitrate (plus CO<sub>2</sub>) and 4 mol of O<sub>3</sub> are consumed  
in this reaction. NF<sup>-</sup> reacts with O<sub>3</sub> (k = 1.4 + 10<sup>4</sup> M<sup>-1</sup> s<sup>-1</sup>) by O-  
transfer. The resulting products, (NO<sub>2</sub>)<sub>3</sub>CO- and (NO<sub>2</sub>)<sub>2</sub>CO, rapidly  
hydrolyze (k > 10 s<sup>-1</sup>), and most of the nitrite released is further

oxidized by ozone to nitrate. In the case of slow ozone reactions, these reactions have to be taken into account; i.e. the NO<sub>3</sub><sup>-</sup> yield has to be measured as well. For the determination of hydroperoxides, Fe<sup>2+</sup>-based assays are fraught with considerable potential errors. Reliable data may be obtained with molybdate-activated iodide. The kinetics of this reaction can also be used for the characterization of hydroperoxides. Reactive hydroperoxides undergo rapid O-transfer to sulfides, e.g.,  $k[\text{HC(O)OOH} + (\text{HOCH}_2\text{CH}_2)_2\text{S}] = 220 \text{ M}^{-1} \text{ s}^{-1}$ , and the corresponding reaction with methionine may be used for their quantification (detection of methionine sulfoxide by HPLC). Distinction of organic hydroperoxides and H<sub>2</sub>O<sub>2</sub> by elimination of the latter by reaction with catalase can often be used with advantage but fails with formic peracid, which reacts quite readily with catalase ( $k = 1.3 \times 10^3 \text{ dm}^3 \text{ mg}^{-1} \text{ s}^{-1}$ ). Some examples of •OH and O<sub>2</sub>•- formation in ozone reactions are given.

CC 22-7 (Physical Organic Chemistry)

Section cross-reference(s): 7, 61, 67

IT 9001-05-2, Catalase

RL: CAT (Catalyst use); USES (Uses)

(beef liver; yields of OH radical, oxygen radical anion, and hydroperoxide in ozone reactions in aqueous solution)

IT 58-61-7, Adenosine, reactions 79-14-1, Hydroxyacetic acid, reactions 91-16-7, 1,2-Dimethoxybenzene 91-66-7, N,N-Diethylaniline 95-54-5, o-Phenylenediamine, reactions 100-66-3, Anisole, reactions 107-32-4, Methaneperoxoic acid 108-95-2, Phenol, reactions 110-05-4, tert-Butyl peroxide 111-48-8, Bis(2-hydroxyethyl) sulfide 120-80-9, Catechol, reactions 123-31-9, Hydroquinone, reactions 150-78-7, 1,4-Dimethoxybenzene 509-14-8, Tetranitromethane 621-23-8, 1,3,5-Trimethoxybenzene 1892-29-1, Bis(2-hydroxyethyl) disulfide 7722-84-1, Hydrogen peroxide, reactions 7732-18-5, Water, reactions 13408-62-3, Ferrihexacyanide 13408-63-4, Ferrocyanate 14280-30-9, Hydroxy anion, reactions 15438-31-0, Ferrous ion, reactions 20143-63-9, Trinitromethyl anion 20461-54-5, Iodide ion, reactions 24959-67-9, Bromide, reactions 27215-51-6, N,N,N',N'-Tetramethylphenylenediamine 519163-39-4

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (yields of OH radical, oxygen radical anion, and hydroperoxide in ozone reactions in aqueous solution)

RE.CNT 95 THERE ARE 95 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1989:589158 HCAPLUS Full-text

DN 111:189158

OREF 111:31327a,31330a

TI Oxygen-based free radical generation by ferrous  
ions and deferoxamine

AU Klebanoff, Seymour J.; Waltersdorff, Ann M.; Michel, Bryce R.;  
Rosen, Henry

CS Dep. Med., Univ. Washington, Seattle, WA, 98195, USA

SO Journal of Biological Chemistry (1989), 264(33), 19765-71

CODEN: JBCHA3; ISSN: 0021-9258

DT Journal

LA English

AB Deferoxamine accelerates the autoxidn. of Fe as measured by the rapid disappearance of Fe<sup>2+</sup>, the associated appearance of Fe<sup>3+</sup>, and the uptake of O. Protons are released in the reaction. The formation of H<sub>2</sub>O<sub>2</sub> was detected by the horseradish peroxidase-catalyzed oxidation of scopoletin, and the formation of OH was suggested by the formation of the OH spin trap adduct (DMPO/OH) with the spin trap 5,5-dimethyl-1-pyrroline N-oxide (DMPPO) and the generation of the Me radical adduct on the further addition of DMSO. (DMPO/OH) adduct formation was inhibited by catalase but not by superoxide dismutase. The oxidant formed converted iodide to a Cl<sub>3</sub>CCO<sub>2</sub>H-precipitable form (iodination) and was bactericidal to logarithmic phase Escherichia coli. Both iodination and bactericidal activity was inhibited by catalase and by OH scavengers, but not by superoxide dismutase. Iodination was optimal in 5 + 10-4M acetate buffer, pH 5.0, and when the Fe<sup>2+</sup> and deferoxamine concns. were equimolar at 10-4M. Fe<sup>2+</sup> could not be replaced by Fe<sup>3+</sup>, Co<sup>2+</sup>, Zn<sup>2+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, or Mn<sup>2+</sup>, or deferoxamine by EDTA, diethylenetriaminepentaacetic acid, or bathophenanthroline. Thus, Fe<sup>2+</sup> and deferoxamine can act as an O radical generating system, which may contribute to its biol. effects in vitro and in vivo.

CC 4-3 (Toxicology)

IT 3352-57-6, Hydroxyl radical, biological studies 7722-84-1,  
Hydrogen peroxide, biological studies

7782-44-7D, Oxygen, radicals 11062-77-4, Superoxide

RL: FORM (Formation, nonpreparative)

(formation of, deferoxamine and iron in, toxicity to Escherichia coli in relation to)

L36 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1946:20936 HCAPLUS Full-text

DN 40:20936

OREF 40:4109b-e

TI Microbiological synthesis of riboflavin - theory concerning its  
inhibition

AU Leviton, Abraham

CS U.S. Dept. Agr., Washington, DC

SO Journal of the American Chemical Society (1946), 68, 835-40

CODEN: JACSAT; ISSN: 0002-7863

DT Journal

LA Unavailable

AB Riboflavin (I) which in pure solns. is exceedingly stable to the action of H2O2 is decomposed rapidly by dilute solns. of this reagent in the presence of traces of the ferrous ion. The rate of decomposition increases abruptly between 0.18 and 0.36 mg.-atom of the ferrous ion per l. In the microbiol. synthesis of I by Clostridium acetobutylicum (II), a drastic reduction in the yield of I occurs precisely in the concentration range of the ferrous ion. Added I is also destroyed in this range and this suggested that the action of the Fe is in part at least destructive rather than inhibitory. The view that the destruction of I by II operates through a peroxide mechanism is supported by expts. in which significant increases in yield of I are obtained by the use of NaHSO3 and traces of crystalline catalase. Iodide ion stabilizes I against the action of H2O2 in vitro and in vivo but is inhibitory to the microbiol. synthesis of I. This is explained on the basis of the independent inhibitory action of iodine ion operating through a mechanism in which iodine formed by the action of H2O2 reacts in the presence of the ferrous ion with the precursors of I. Simultaneous with its action on I, H2O2 undergoes a thermal decomposition which is catalysed by the ferrous ion. This decomposition is characterized by a lag period during which the greater portion of I is destroyed. Ferrous and no ferric ion activates the decomposition of I. The use of H2O2 to destroy interfering pigments in analytical procedures for the determination of I is justified only in the absence of traces of the ferrous ion and perhaps of other metallic ions.

CC 11C (Biological Chemistry: Microbiology)

IT 7439-89-6, Iron  
(as catalyst, in vitamin B2 decomposition by H2O2 in presence of ion of)

IT 7553-56-2, Iodine  
(effect on vitamin B2 decomposition by H2O2)

IT 7722-84-1, Hydrogen peroxide  
(vitamin B2 decomposition by, in presence of ferrous ion)

=> d 162 1-39 bib abs hitind

L62 ANSWER 1 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2008:1392064 HCAPLUS Full-text

DN 149:562896

TI Apparatus and system for treating water by removing microorganism and scaling components

IN Oe, Kasumi; Umezawa, Hiroyuki

PA Sanyo Electric Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 20pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2008279408	A	20081120	JP 2007-128007	20070514

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PRAI JP 2007-128007 20070514

AB The apparatus comprises a 1st and a 2nd modules each provided with a 1st water permeable electrode installed in a water channel, C fibers installed downstream of the 1st electrode, a 2nd water permeable electrode coupled with the 1st water permeable electrode and installed downstream of the C fibers, and a non-conductive porous spacer installed between the 2nd electrode and the C fibers. The system comprises the above-mentioned apparatus, detection means for detecting microorganism amount and scaling component amount, and control means for controlling the elec. power application to both modules. Microorganism and scaling components are removed from water, e.g. river water, drinking water, swimming pool water, spring water, etc.

CC 61-5 (Water)  
 Section cross-reference(s): 10, 57, 72

ST hydrogen peroxide biol decompn catalase  
 Aspergillus

IT Water purification  
 (electrolysis, apparatus and system; water purification apparatus and system for removing microorganism and scaling components from water)

IT Water purification  
 (filtration, apparatus and system; water purification apparatus and system for removing microorganism and scaling components from water)

IT Scale (deposits)  
 (prevention; water purification apparatus and system for removing microorganism and scaling components from water)

IT Microorganism  
 (removal of; water purification apparatus and system for removing microorganism and scaling components from water)

IT Water purification



&lt;--

PRAI US 2005-750764P P 20051214

AB The present invention relates to binary methods and compns. comprising hypohalite (preferably hypochlorite) and peroxide (preferably hydrogen peroxide) directed to the killing of pathogenic microbes such as parasites, bacteria, fungi, yeast, and prions, the oxidation of toxins, and the preparation of potable water. The binary methods and compns. extend the microbicidal potency of conventional hypochlorite by providing addnl. singlet mol. oxygen generated in situ, and offer more control over reactive chlorination exposure than hypochlorite alone. This combination is a highly effective disinfecting and decontaminating agent, capable of disinfection, detoxification, or deactivation of biol. contamination and many chemical toxins, facilitating the sterilizing of surfaces and solns., and the production of potable water. Thus, augmented microbicidal activity of the binary system sodium hypochlorite-hydrogen peroxide against Staphylococcus aureus was observed, as compared to any of the agents alone. The use of binary system of 0.03 mM NaOCl and 0.15 mM acidified peroxide gave up to 1.92 log10 CFU (84-fold) increase in kill when compared to equivalent levels of hypochlorite alone.

CC 63-8 (Pharmaceuticals)

Section cross-reference(s): 61

ST hypohalite hypochlorite hydrogen peroxide binary sterilization disinfection potable water

IT Water purification  
(sterilization and disinfection; hypohalite-peroxide binary compns. and methods for sterilization and disinfection of surfaces and solns., and production of potable water)

IT 71-00-1, L-Histidine, biological studies 18472-51-0, Chlorhexidine gluconate 25655-41-8, Povidone iodine  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(comparison with; hypohalite-peroxide binary compns. and methods for sterilization and disinfection of surfaces and solns., and production of potable water)

IT 1313-60-6, Sodium peroxide 7681-52-9, Sodium hypochlorite 7722-84-1, Hydrogen peroxide, biological studies  
RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
(hypohalite-peroxide binary compns. and methods for sterilization and disinfection of surfaces and solns., and production of potable water)

IT 7772-98-7, Sodium thiosulfate 9001-05-2, Catalase  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(hypohalite-peroxide binary compns. and methods for sterilization  
and disinfection of surfaces and solns., and production of potable  
water)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 3 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:472393 HCAPLUS Full-text

DN 145:235199

TI Column-based remediation of groundwater nitrogen via stimulation of  
nitrification and denitrification

AU Plowman, Robert D.; Livingston, Matthew; Scalzi, Michael

CS Novozymes Biologicals, Salem, VA, USA

SO In Situ and On-Site Bioremediation, Proceedings of the International

In Situ and On-Site Bioremediation Symposium, 8th, Baltimore, MD,

United States, June 6-9, 2005 (2005), 0.04/1-0.04/9

Publisher: Battelle Press, Columbus, Ohio.

CODEN: 69ICGL; ISBN: 1-57477-152-3

DT Conference; (computer optical disk)

LA English

AB A former research laboratory facility utilized a leach field for  
sanitary and aqueous laboratory waste. Surrounding soils and  
groundwater are impacted by ammonia and pH varies between 3.6 and 5.  
The feasibility of employing an in-situ, two-stage,  
nitrification/denitrification program was evaluated via a soil column  
study. The objective of the study was to determine the efficacy of  
stimulating nitrification, followed by denitrification, and to  
provide a basis for scale-up design and cost for the full-scale  
remedy. The study consisted of monitoring the inorg. nitrogen  
content of leachates from 7 columns with 4 conditions over six weeks.  
The four conditions were (1) unamended groundwater controls, (2) pH  
adjusted, o-PO4-P amended groundwater tests with daily peroxide  
addition, (3) condition 2 augmented with a pure nitrifying consortium  
and, (4) condition 3 amended with catalase enzyme. During the  
nitrification phase, condition 1 nitrified to a very limited degree,  
indicating the presence of indigenous nitrifying organisms.  
Condition 2 confirmed the presence of indigenous nitrifiers, although  
nitrification performance was incomplete and sporadic. Condition 3  
significantly outperformed condition 2. No benefit was observed from  
catalase addition. Column exhaustion required the denitrification  
phase to be performed as a slurry reaction. Slurries 1 and 2 were fed  
nitrate, glucose, phosphate, and sulfite to scavenge oxygen. Slurry  
3 was treated in the same manner with the addition of a single  
denitrifying bacterial strain. Slurry 1 failed to denitrify.

Slurries 2 and 3 reduced 100 mg/L of nitrate at rates of 14 and 59.5 mg/L/day, resp.

CC 61-2 (Water)

Section cross-reference(s): 19

IT Water purification

(denitrification; column-based remediation of groundwater nitrogen by stimulation nitrification and denitrification)

IT Water purification

(nitrification, biol.; column-based remediation of groundwater nitrogen by stimulation nitrification and denitrification)

IT 50-99-7, D-Glucose, biological studies 9001-05-2,

Catalase

RL: BSU (Biological study, unclassified); BIOL (Biological study) (column-based remediation of groundwater nitrogen by stimulation nitrification and denitrification)

IT 7722-84-1, Hydrogen peroxide, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(column-based remediation of groundwater nitrogen by stimulation nitrification and denitrification)

L62 ANSWER 4 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:323730 HCAPLUS Full-text

DN 144:330227

TI Method and apparatus for sterilization of small fish prior to boiling

IN Kawakubo, Takeshi

PA Kawakubo Seisakusho K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 2006087343	A	20060406	JP 2004-276509
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200409  
24

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PRAI JP 2004-276509 20040924 <--

AB Small fish is sterilized by (1) spraying disinfectants such as H<sub>2</sub>O<sub>2</sub>, NaClO, etc., optionally mixed with compressed air from a spray nozzle over the fish and (2) spraying the fish with catalysts to promote oxidative decomposition of the disinfectants. The apparatus comprises a conveyor to transfer the fish to a boiling apparatus, a

disinfectant spray nozzle, a spray mechanism to feed catalysts to the fish, and a nozzle to sprinkle the fish with rinse water. The catalysts may be  $\geq 1$  selected from alkaline or acidic water produced by electrolysis, catalase, activated C, groundwater, and Ca, Fe, Mg, Mn, Zn, and Na as minerals of seawater. This method completely removes residual disinfectants from the fish and slightly pollutes environment.

CC 17-4 (Food and Feed Chemistry)

Section cross-reference(s): 61

ST fish sterilization catalyst spraying residual disinfectant decompn;  
catalase spraying fish sterilization residual  
hydrogen peroxide decompn

IT Sterilization and Disinfection

(apparatus; sterilization of small fish prior to boiling by

spraying

disinfectants and spraying catalysts such as catalase,  
activated C, seawater minerals, etc., to promote decomposition of

the

disinfectants, and apparatus therefor)

IT Cooking

(boiling; sterilization of small fish prior to boiling by  
spraying disinfectants and spraying catalysts such as  
catalase, activated C, seawater minerals, etc., to  
promote decomposition of the disinfectants, and apparatus

therefor)

IT Air

(compressed; sterilization of small fish prior to boiling by  
spraying disinfectants and spraying catalysts such as  
catalase, activated C, seawater minerals, etc., to  
promote decomposition of the disinfectants, and apparatus

therefor)

IT Water purification

(electrolysis; sterilization of small fish prior to boiling by  
spraying disinfectants and spraying catalysts such as  
catalase, activated C, seawater minerals, etc., to  
promote decomposition of the disinfectants, and apparatus

therefor)

IT Catalysts

Disinfectants

Fish

Groundwaters

Oxidizing agents

Seawater

Sterilization and Disinfection

(sterilization of small fish prior to boiling by spraying  
disinfectants and spraying catalysts such as catalase,  
activated C, seawater minerals, etc., to promote decomposition of

the  
 IT        disinfectants, and apparatus therefor)  
 IT        Mineral elements, biological studies  
           RL: CAT (Catalyst use); FFD (Food or feed use); BIOL (Biological  
           study); USES (Uses)  
           (sterilization of small fish prior to boiling by spraying  
           disinfectants and spraying catalysts such as catalase,  
           activated C, seawater minerals, etc., to promote decomposition of  
 the  
           disinfectants, and apparatus therefor)  
 IT        7440-44-0, Activated carbon, biological studies  
           RL: CAT (Catalyst use); FFD (Food or feed use); BIOL (Biological  
           study); USES (Uses)  
           (activated; sterilization of small fish prior to boiling by  
           spraying disinfectants and spraying catalysts such as  
           catalase, activated C, seawater minerals, etc., to  
           promote decomposition of the disinfectants, and apparatus  
 therefor)  
 IT        7732-18-5, Water, biological studies  
           RL: CAT (Catalyst use); FFD (Food or feed use); BIOL (Biological  
           study); USES (Uses)  
           (reducing, acidic or alkaline; sterilization of small fish prior  
 to  
           boiling by spraying disinfectants and spraying catalysts such as  
           catalase, activated C, seawater minerals, etc., to  
           promote decomposition of the disinfectants, and apparatus  
 therefor)  
 IT        7439-89-6, Iron, biological studies    7439-95-4, Magnesium,  
           biological studies    7439-96-5, Manganese, biological studies  
           7440-23-5, Sodium, biological studies    7440-66-6, Zinc, biological  
           studies    7440-70-2, Calcium, biological studies 9001-05-2  
           , Catalase  
           RL: CAT (Catalyst use); FFD (Food or feed use); BIOL (Biological  
           study); USES (Uses)  
           (sterilization of small fish prior to boiling by spraying  
           disinfectants and spraying catalysts such as catalase,  
           activated C, seawater minerals, etc., to promote decomposition of  
 the  
           disinfectants, and apparatus therefor)  
 IT        7681-52-9, Sodium hypochlorite 7722-84-1, Hydrogen  
           peroxide, biological studies    7778-54-3, Bleaching powder  
           RL: FFD (Food or feed use); REM (Removal or disposal); BIOL  
           (Biological study); PROC (Process); USES (Uses)  
           (sterilization of small fish prior to boiling by spraying  
           disinfectants and spraying catalysts such as catalase,  
           activated C, seawater minerals, etc., to promote decomposition of  
 the

disinfectants, and apparatus therefor)

L62 ANSWER 5 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2006:101276 HCAPLUS Full-text  
DN 144:156118  
TI Method for treating ship ballast water  
IN Wakao, Yoshiharu; Tabuchi, Takuro; Mizumori, Takashi  
PA Katayama Chemical Inc., Japan  
SO PCT Int. Appl., 23 pp.  
CODEN: PIXXD2  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	WO 2006011315	A1	20060202	WO 2005-JP11167	200506 17

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF,  
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG,  
BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

AU	2005256100	A1	20060302	AU 2005-256100	200506 17
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EP	1671932	A1	20060621	EP 2005-751319	200506 17
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
PL, SK, BA, HR, IS, YU  
US 20060289364 A1 20061228 US 2006-567682  
200602  
09

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PRAI JP 2004-224403 A 20040730 <--  
 JP 2004-242422 A 20040823 <--  
 WO 2005-JP11167 W 20050617 <--

AB A method for treating ship ballast H2O, comprises adding, to ship ballast H2O, H2O2 or a H2O2 generating compound in such an amount that gives a H2O2 concentration of 10-500 mg/L and ≥1 member selected from a ferrous ion or a ferrous ion supply compound in such an amount that gives ferrous ion concentration of 0.1-400 mg/L, catalase in such an amount that gives a catalase concentration of 0.5-2500 units/L, and I or an I supply compound in such an amount that gives an I concentration of 0.1-100 mg/L, thereby exterminating organisms in the ballast H2O.

IC ICM C02F001-50  
 ICS B63B013-00; C02F001-72; C02F001-76

CC 61-5 (Water)

ST ship ballast water purifn organism  
 catalase iodine

IT Water purification  
 (biofouling control; method for treating ship ballast water)

IT Ships  
 Water purification  
 (method for treating ship ballast water)

IT 79-21-0, Peroxy acetic acid 7553-56-2,  
 Iodine, uses 7681-11-0, Potassium iodide  
 , uses 7720-78-7, Ferrous sulfate 7722-84-1,  
 Hydrogen peroxide, uses 9001-05-2,  
 Catalase  
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
 (method for treating ship ballast water)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 6 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2005:1004848 HCAPLUS Full-text  
 DN 143:271886  
 TI Enzymes as corrosion inhibitors by removal of oxygen dissolved in water  
 IN De Dominicis, Mattia; Oliva, Lilana  
 PA Reckitt Benckiser N.V., Neth.; Reckitt Benckiser Uk Limited  
 SO PCT Int. Appl., 16 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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 PI WO 2005085385 A1 20050915 WO 2005-GB813 200503  
 02

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 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
 MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
 SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,  
 UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,  
 NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,  
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2005219640 A1 20050915 AU 2005-219640 200503  
 02

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 EP 1730248 A1 20061213 EP 2005-717891 200503  
 02

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 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR  
 BR 2005008366 A 20070731 BR 2005-8366

200503  
 02

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 MX 2006PA10061 A 20061115 MX 2006-PA10061 200609  
 04

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 US 20080020439 A1 20080124 US 2006-598435 200611  
 07

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 PRAI GB 2004-4658 A 20040302 <--  
 WO 2005-GB813 W 20050302 <--  
 AB A corrosion inhibiting system for aerosol products is based on  
 enzymes to remove dissolved oxygen from water contained in the  
 aerosol. The enzymic system consists of an oxidase and D-glucose as  
 a substrate and catalase. These two enzymes consume oxygen by a two  
 step reaction with the substrate and hydrogen peroxide, which is  
 formed in the 1st reaction.

IC ICM C09K003-00  
 ICS B65D083-14; C12N009-04  
 CC 61-8 (Water)  
 Section cross-reference(s): 7, 55  
 ST enzyme corrosion inhibitor oxidase catalase dissolved  
 oxygen water aerosol  
 IT Water purification  
 (deoxygenation; enzymes as corrosion inhibitors by removal of  
 oxygen dissolved in water)  
 IT 7722-84-1, Hydrogen peroxide, processes  
 RL: BSU (Biological study, unclassified); FMU (Formation,  
 unclassified); REM (Removal or disposal); BIOL (Biological study);  
 FORM (Formation, nonpreparative); PROC (Process)  
 (enzymes as corrosion inhibitors by removal of oxygen dissolved  
 in water)  
 IT 9001-05-2, Catalase 9001-37-0, Glucose Oxidase  
 RL: BSU (Biological study, unclassified); REM (Removal or disposal);  
 BIOL (Biological study); PROC (Process)  
 (enzymes as corrosion inhibitors by removal of oxygen dissolved  
 in water)  
 RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 7 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2005:920780 HCAPLUS Full-text  
 DN 144:106929  
 TI Effects of prestorage heat treatment on chilling tolerance and free  
 radical biology in cucumber  
 AU Hou, Jianshe; Xi, Yufang; Li, Zhonghua; Mo, Wengui  
 CS Department of Food Science, Zhejiang University, Hangzhou, 310029,  
 Peop. Rep. China  
 SO Shipin Yu Fajiao Gongye (2004), 30(5), 138-142  
 CODEN: SPYYDO; ISSN: 0253-990X  
 PB Shipin Yu Fajiao Gongye  
 DT Journal  
 LA Chinese  
 AB To reduce the chilling injury of cucumbers stored at low temperature,  
 the effects of film packaging and pre-storage heat treatment on  
 chilling injury index, weight loss, decay and metabolism of activated  
 oxygen were studied. The film packaging significantly restrained  
 severe water loss in cucumbers but had no significant effect on  
 chilling injury and aggravated decay in cucumbers. Dipping at 42°C  
 for 60 min in hot water or at 48°C for 30min prevented decay,  
 significantly alleviated the chilling injury and increased the  
 activity of activated oxygen eliminating enzymes such as SOD  
 (superoxide dismutase), CAT (catalase) and POD (peroxidase),  
 therefore reducing the content of activated oxygen such as O2-. and

H2O2 and restraining membrane lipid peroxidn. The pre-storage hot water treatment combined with film packaging effectively prevents severe water loss and decay, restrains imbalance of activated oxygen metabolism and alleviates chilling injury in cucumber fruits stored at low temperature

CC 17-4 (Food and Feed Chemistry)

IT 542-78-9, Malondialdehyde 7722-84-1, Hydrogen

peroxide, biological studies 9001-05-2,

Catalase 9003-99-0, Peroxidase 9054-89-1, Superoxide

dismutase 11062-77-4, Superoxide

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(effects of prestorage heat treatment on chilling tolerance and free radical biol. in cucumber)

L62 ANSWER 8 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:643696 HCAPLUS Full-text

DN 143:476755

TI Effect of Prestorage Hot Water Treatment on  
Antioxidant Enzyme Activities in Cold-stored Tomato

AU Xiao, Hongmei; Zhou, Guanghong

CS College of Food Science and Technology, Nanjing Agricultural  
University, Nanjing, Jiangsu Province, 210095, Peop. Rep. China

SO Shipin Kexue (Beijing, China) (2004), 25(10), 331-335

CODEN: SPKHD5; ISSN: 1002-6630

PB Zhongguo Shipin Zazhishe

DT Journal

LA Chinese

AB The effect of oxidative stress in cold-stored tomato was studied. The parameters of activated oxygen scavenging enzymes such as superoxide dismutase (SOD), catalase (CAT), peroxidase (POD), ascorbate peroxidase (APX) were examined during storage. Exposure to low temperature enhanced H2O2 generation and membrane injury. Prestorage hot water treatment (38 degree C, 1 h) increased the activities of SOD, CAT, and APX, but not POD, and persisted high activities of CAT and APX during long chilling storage. These results indicated that oxidative stress might be involved in cold-induced membrane damage of tomato fruit. Prestorage hot water treatment may keep membrane permeability by improving the activities of antioxidant enzymes.

CC 17-4 (Food and Feed Chemistry)

Section cross-reference(s): 1

ST tomato cold storage hot water treatment  
oxidative stress

IT Lycopersicon esculentum

Storage

(effect of prestorage hot water treatment on  
antioxidant enzyme activities in cold-stored tomato)

IT 542-78-9, Malondialdehyde

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(effect of prestorage hot water treatment on  
antioxidant enzyme activities in cold-stored tomato)

IT 9001-05-2, Catalase 9003-99-0, Peroxidase  
9054-89-1, Superoxide dismutase 72906-87-7, Ascorbate peroxidase

RL: CAT (Catalyst use); USES (Uses)  
(effect of prestorage hot water treatment on  
antioxidant enzyme activities in cold-stored tomato)

L62 ANSWER 9 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:535028 HCAPLUS Full-text

DN 139:280800

TI Optimal methods for quenching H2O2 residuals prior to UFC  
testing

AU Liu, Wenjun; Andrews, Susan A.; Stefan, Mihaela I.; Bolton, James R.  
CS NSERC Water Treatment, Department of Civil Engineering, University  
of Waterloo, Waterloo, ON, N2L 3G1, Can.

SO Water Research (2003), 37(15), 3697-3703

CODEN: WATRAG; ISSN: 0043-1354

PB Elsevier Science B.V.

DT Journal

LA English

AB The quenching of H2O2 by catalase, Na hypochlorite, Na thiosulfate  
and Na sulfite, prior to UFC (uniform formation condition) testing,  
was studied. Na hypochlorite, Na thiosulfate and Na sulfite were  
unsuitable for quenching H2O2 residuals because the procedures are  
time-consuming and complicated in that they require potentially  
multiple measurements of the peroxide and Cl residuals. In contrast,  
quenching of peroxide with catalase is a simple procedure. Catalase  
doses of <0.2 mg/L had no impact on DBP (TTHM, HAA and aldehyde)  
formation in the UFC test, and the time that was needed to quench 100  
mg/L peroxide (room temperature, pH 8.3) was <10 min. Peroxide reacts  
with DPD reagents that are used to measure Cl residuals, a phenomenon  
that may lead to falsely high Cl residuals in the UFC test.

CC 61-5 (Water)

Section cross-reference(s): 60

ST optimization quenching hydrogen peroxide water

IT Wastewater treatment

Water purification

(chlorination; optimal methods for quenching hydrogen  
peroxide residuals prior to UFC testing)

IT Wastewater treatment

(disinfection; optimal methods for quenching hydrogen  
peroxide residuals prior to UFC testing)

IT Optimization

(optimal methods for quenching hydrogen  
peroxide residuals prior to UFC testing)

IT Aldehydes, formation (nonpreparative)  
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (optimal methods for quenching hydrogen  
 peroxide residuals prior to UFC testing)

IT Wastewater treatment  
 Water purification  
 (oxidation; optimal methods for quenching hydrogen  
 peroxide residuals prior to UFC testing)

IT Water purification  
 (sterilization and disinfection; optimal methods for quenching  
 hydrogen peroxide residuals prior to UFC  
 testing)

IT 64-19-7D, Acetic acid, halo derivs. 74-82-8D, Methane, halo  
 derivs.  
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (optimal methods for quenching hydrogen  
 peroxide residuals prior to UFC testing)

IT 7681-52-9, Sodium hypochlorite 7757-83-7, Sodium sulfite  
 7772-98-7, Sodium thiosulfate 9001-05-2, Catalase  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (optimal methods for quenching hydrogen  
 peroxide residuals prior to UFC testing)

IT 7722-84-1, Hydrogen peroxide, processes  
 RL: REM (Removal or disposal); PROC (Process)  
 (optimal methods for quenching hydrogen  
 peroxide residuals prior to UFC testing)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 10 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:247115 HCAPLUS Full-text

DN 139:81748

TI The defense of bacteria *Comamonas* sp. against oxidative stress with  
 the induction of catalases

AU Bohacova, Viera; Godocikova, Jana; Zamocky, Marcel; Polek, Bystrík  
 CS Institute of Molecular Biology, Slovak Academy of Sciences,  
 Bratislava, SK-84551, Slovakia

SO Biologia (Bratislava, Slovakia) (2002), 57(6), 813-822

CODEN: BLOAAO; ISSN: 0006-3088

PB Slovak Academy of Sciences

DT Journal

LA English

AB The production of catalases as a response to oxidative stressors was  
 tested in different phases of growth cycle of the bacterial strains:  
*C. terrigena* N3H and N1C isolated from soils contaminated with crude  
 oil, *C. testosteroni*, the natural isolate from a sludge of waste  
 water treatment plant, and *C. testosteroni* 1931T-ATCC 11996 obtained

from the cultures collection. We found that the induction of catalatic and peroxidatic activities were dependent on an individual strain, its growth phase, and also on the kind of oxidant. 0.5 mM peracetic acid (PAA) and 0.5 mM hydrogen peroxide ( $H_2O_2$ ) induced the highest catalase activity in the strain *C. terrigena* N3H in the middle exponential phase of the growth (approx. 5 or 3 fold) in comparison to controls. In contrast paraquat (PQ) and cadmium (Cd) influenced the expression of catalases mainly in the later phases of growth.  $H_2O_2$  induced significant increase of the peroxidatic activity in the middle exponential phase in *C. terrigena* N3H and in the late stationary phase of the wild type strain of *C. testosteroni*. Cumene hydroperoxide and hydrogen peroxide induced significant increase in peroxidatic activity in the middle exponential phase of *C. terrigena* N3H. Homogenates of the collection strain *C. testosteroni* did not exhibit a significant increase in the low levels of catalatic and peroxidatic activities. We analyzed the role of catalase isoenzymes in response to oxidative stress, with native gradient polyacrylamide electrophoresis. In the case of *C. testosteroni* strains only one band with mol. weight of 150 kDa was identified that corresponds to the constitutively expressed enzyme. During their growth, the strains of *C. terrigena* N3H and N1C induced one, two or three forms of catalase, as the response to oxidative stress. The appearance of the protein band with higher mol. weight approx. 240 kDa was typical for the later phases of growth. The results suggest, that despite the fact that the tested strains belong taxonomically to the same genus or species, they exhibit significant diversity and respond distinctly to the oxidative stress.

- CC 10-1 (Microbial, Algal, and Fungal Biochemistry)  
Section cross-reference(s): 7, 19, 51, 60
- ST Comamonas species difference oxidative stress catalase  
peroxidase induction; crude oil soil contamination waste water  
sludge oxidant Comamonas
- IT Wastewater treatment sludge  
(*C. testosteroni* isolated from; defense of bacteria Comamonas  
against oxidative stress with induction of catalases  
and peroxidases)
- IT Soil pollution  
(crude oil, *C. terrigena* isolated from; defense of bacteria  
Comamonas against oxidative stress with induction of  
catalases and peroxidases)
- IT Comamonas terrigena  
Comamonas testosteroni  
Oxidative stress, biological  
(defense of bacteria Comamonas against oxidative stress with  
induction of catalases and peroxidases)
- IT Growth, microbial  
(growth phase influence on induction of catalatic and peroxidatic

activity; defense of bacteria Comamonas against oxidative stress with induction of catalases and peroxidases)

IT Species differences  
(of Comamonas; defense of bacteria Comamonas against oxidative stress with induction of catalases and peroxidases)

IT Petroleum, biological studies  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(soil contamination with, C. terrigena isolated from; defense of bacteria Comamonas against oxidative stress with induction of catalases and peroxidases)

IT 9001-05-2, Catalase 9003-99-0, Peroxidase  
RL: BSU (Biological study, unclassified); BIOL (Biological study) (expression and activity of; defense of bacteria Comamonas against oxidative stress with induction of catalases and peroxidases)

IT 79-21-0, Peracetic acid 80-15-9, Cumene hydroperoxide 4685-14-7, Paraquat 7440-43-9, Cadmium, biological studies 7722-84-1, Hydrogen peroxide, biological studies  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(oxidant-induced catalase expression; defense of bacteria Comamonas against oxidative stress with induction of catalases and peroxidases)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 11 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2002:459221 HCAPLUS Full-text  
DN 137:224003  
TI A synergistic effect of photocatalysis and ozonation on decomposition of formic acid in an aqueous solution  
AU Wang, Shinpon; Shiraishi, Fumihide; Nakano, Katsuyuki  
CS Department of Biochemical Engineering and Science, Faculty of Computer Science and Systems Engineering, Kyushu Institute of Technology, Iizuka, 820-8502, Japan  
SO Chemical Engineering Journal (Amsterdam, Netherlands) (2002), 87(2), 261-271  
CODEN: CMEJAJ; ISSN: 1385-8947  
PB Elsevier Science B.V.  
DT Journal  
LA English  
AB A synergistic effect of photocatalysis and ozonation on the decomposition of formic acid dissolving in an aqueous solution has been studied. In the photocatalysis over a thin film of titanium oxide immobilized on the inner surface of a glass tube, a 6 W black

light blue fluorescent lamp (wavelength: 300-400 nm) was used as a light source. The initial decomposition rates followed a Langmuir-Hinshelwood type and the hydrogen peroxide generated during the photocatalytic reaction played an important role in the decomposition of formic acid. In the ozonation, a 6 W low-pressure mercury lamp (wavelength: 185 nm) was used to produce ozone by irradiation of the air with UV. When this air was circulated in a closed system with a water-holding glass container, the ozone concns. in the air and water reached 0.350 g m<sup>-3</sup> air and 0.037 g m<sup>-3</sup> liquid, resp., at maximum. The decomposition rate of formic acid by ozone was higher for a lower liquid temperature and a higher pH value. For comparison, the Langmuir-Hinshelwood type was also used to analyze both the exptl. values obtained in the ozonation alone and in the combination of photocatalysis and ozonation. A relationship between the reaction rate and reactant concentration was calculated using the kinetic parameters determined from the exptl. values in each reaction system. As a result, the decomposition rate of formic acid by the combination of photocatalysis and ozonation was found to be 31% higher at maximum than the sum of the decomposition rates when formic acid was individually decomposed by the two methods, which indicates the presence of a synergistic effect of the photocatalysis and ozonation. This effect may be explained by the promoted production of hydroxyl radicals by ozone over titanium oxide.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 60, 61, 67

IT Water purification

(photocatalytic; synergistic effect of photocatalysis and ozonation on decomposition of formic acid in aqueous solution in relation to)

IT 9001-05-2, Catalase

RL: CAT (Catalyst use); USES (Uses)

(synergistic effect of photocatalysis and ozonation on decomposition of formic acid in aqueous solution)

IT 7722-84-1, Hydrogen peroxide, reactions  
11062-77-4, Superoxide

RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(synergistic effect of photocatalysis and ozonation on decomposition of formic acid in aqueous solution in relation to)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 12 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2001:185902 HCAPLUS Full-text  
 DN 134:233995  
 TI Apparatus generating oxygenated chemical radicals and industrial applications thereof  
 IN Calone-Bonneau, Marguerite Gabrielle  
 PA Bordeaux, Philippe, Fr.  
 SO PCT Int. Appl., 22 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA French  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2001018188	A2	20010315	WO 2000-FR2438	200009 05
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	WO 2001018188	A3	20010802		
	W:			AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, SZ, BE, CY, FR, GR, IE, IT, MC, NL, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	RW:			GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	FR 2798137	A1	20010309	FR 1999-11314	199909 07

PRAI FR 1999-11314 A 19990907 <--  
 AB The invention concerns a novel apparatus for enzymic production of oxygenated free chemical radicals in liquid or gas form specifically adapted to various industrial purposes. The apparatus comprising a sealed chamber containing immobilized enzymes of plant, microbial or animal origin, belonging to the oxidoreductase group. The device, after various oxygen-containing chemical compns. and enzyme substrates have been introduced into the chamber, enables the generation of a concentrated and continuous flux of oxygenated free chemical radicals and oxidized substrates having biocidal activity. Said biocidal products are applied, in liquid or gas form and in sufficient concentration levels, for decontaminating food products

(milk and milk products, meat, fruits and vegetables, beverages), for cleaning and disinfecting equipment (containers, tools, machines, fabrics, packages) and industrial premises, for detoxication and sanitizing water and air, and for destructive treatment of organic waste.

IC ICM C12N011-00

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 7, 17, 59, 60, 61

IT Drinking waters

(purification of; apparatus generating oxygenated chemical radicals

and industrial applications thereof)

IT 50-99-7, Glucose, biological studies 63-42-3, Lactose 69-89-6, Xanthine 79-21-0, Peracetic acid 333-20-0, Potassium thiocyanate 540-72-7, Sodium thiocyanate 1335-26-8, Magnesium peroxide 7631-90-5, Sodium bisulfite 7632-00-0, Sodium nitrite 7681-52-9, Sodium hypochlorite 7681-57-4, Sodium metabisulfite 7722-64-7, Potassium permanganate 7722-84-1, Hydrogen peroxide, biological studies 7758-09-0, Potassium nitrite 7775-14-6, Sodium hydrosulfite  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(apparatus generating oxygenated chemical radicals and industrial applications thereof)

IT 9001-05-2D, E.C. 1.11.1.6, immobilized 9001-37-0D, E.C. 1.1.3.4, immobilized 9002-17-9D, E.C. 1.1.3.22, immobilized 9003-99-0D, E.C. 1.11.1.7, immobilized 9013-03-0D, E.C. 1.6.6.1, immobilized 9028-72-2D, E.C. 1.1.3.2, immobilized 9029-27-0D, E.C. 1.6.6.2, immobilized 9029-38-3D, E.C. 1.8.3.1, immobilized 9029-42-9D, E.C. 1.9.6.1, immobilized 9031-11-2D, E.C. 3.2.1.23, immobilized 9032-24-0D, NADH peroxidase, immobilized 9054-89-1D, E.C. 1.15.1.1, immobilized 9055-15-6D, Oxidoreductase, immobilized 9079-67-8D, E.C. 1.6.99.3, immobilized 125978-95-2D, Nitric oxide synthase, immobilized

RL: DEV (Device component use); USES (Uses)

(apparatus generating oxygenated chemical radicals and industrial applications thereof)

L62 ANSWER 13 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:809767 HCAPLUS Full-text

DN 134:21191

TI The fate of hydrogen peroxide as an oxygen source for bioremediation activities within saturated aquifer systems

AU Zappi, Mark; White, Kenneth; Hwang, Huey-Min; Bajpai, Rakesh; Qasim, Mohammad

CS Department of Chemical Engineering, Mississippi State University,

USA  
SO Journal of the Air & Waste Management Association (2000),  
50(10), 1818-1830  
CODEN: JAWAFC; ISSN: 1096-2247  
PB Air & Waste Management Association  
DT Journal  
LA English  
AB In situ bioremediation is an innovative technique for the remediation of contaminated aquifers that involves the use of microorganisms to remediate soils and groundwaters polluted by hazardous substances. During its application, this process may require the addition of nutrients and/or electron acceptors to stimulate appropriate biol. activity. H<sub>2</sub>O<sub>2</sub> was commonly used as an O<sub>2</sub> source because of the limited concns. of O<sub>2</sub> that can be transferred into the groundwater using above-ground aeration followed by reinjection of the oxygenated groundwater into the aquifer or subsurface air sparging of the aquifer. Because of several potential interactions of H<sub>2</sub>O<sub>2</sub> with various aquifer material constituents, its decomposition may be too rapid, making effective introduction of the H<sub>2</sub>O<sub>2</sub> into targeted treatment zones extremely difficult and costly. Therefore, a bench-scale study was conducted to determine the fate of H<sub>2</sub>O<sub>2</sub> within subsurface aquifer environments. The purpose of this investigation was to identify those aquifer constituents, both biotic and abiotic, that are most active in controlling the fate of H<sub>2</sub>O<sub>2</sub>. The decomposition rates of H<sub>2</sub>O<sub>2</sub> were determined using both equilibrated water samples and soil slurries. Results showed H<sub>2</sub>O<sub>2</sub> decomposition to be effected by several commonly found inorg. soil components; however, biol. mediated catalytic reactions were determined to be the most substantial.

CC 61-5 (Water)  
Section cross-reference(s): 19

ST hydrogen peroxide fate groundwater  
bioremediation; decompn kinetics hydrogen peroxide  
soil component groundwater bioremediation

IT Decomposition kinetics  
(biodegrdn.; of hydrogen peroxide with  
constituents from saturated aquifer systems)

IT Groundwaters  
(bioremediation; fate of hydrogen peroxide as  
oxygen source for bioremediation activities within saturated  
aquifer systems)

IT Soil organic matter  
Soils  
(decomposition kinetics of hydrogen peroxide with  
constituents from saturated aquifer systems)

IT Water purification

(groundwater bioremediation; fate of hydrogen peroxide as oxygen source for bioremediation activities within saturated aquifer systems)

IT Soils  
(loamy; decomposition kinetics of hydrogen peroxide with constituents from saturated aquifer systems)

IT Decomposition kinetics  
(of hydrogen peroxide with constituents from saturated aquifer systems)

IT Clays, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(soil component; decomposition kinetics of hydrogen peroxide with constituents from saturated aquifer systems)

IT 7722-34-1, Hydrogen peroxide, processes  
RL: BPR (Biological process); BSU (Biological study, unclassified); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); BIOL (Biological study); PROC (Process); USES (Uses)  
(fate of hydrogen peroxide as oxygen source for bioremediation activities within saturated aquifer systems)

IT 9001-05-2, Catalase  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(model soil component; decomposition kinetics of hydrogen peroxide with constituents from saturated aquifer systems)

IT 7439-89-6, Iron, processes 7439-96-5, Manganese, processes 7440-23-5, Sodium, processes 7440-70-2, Calcium, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(soil component; decomposition kinetics of hydrogen peroxide with constituents from saturated aquifer systems)

RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 14 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2000:721834 HCAPLUS Full-text  
DN 133:354897  
TI Controlling biofilm formation by hydrogen peroxide and silver combined disinfectant  
AU Armon, R.; Laot, N.; Lev, O.; Shuval, H.; Fattal, B.  
CS Faculty of Civil Engineering, Division of Environmental and Water Resources Engineering, Technion, Haifa, 32000, Israel  
SO Water Science and Technology (2000), 42(1-2), 187-192  
CODEN: WSTED4; ISSN: 0273-1223  
PB IWA Publishing  
DT Journal  
LA English  
AB We examined the biofilm control by a combined disinfectant comprised of H2O2 and Ag ions. The performance of the combined disinfectant

was compared to each of the ingredients alone and to Cl disinfectant. Biofilm growth was studied on uncoated and CaCO<sub>3</sub> coated galvanized Fe samples over prolonged exposure duration. The CaCO<sub>3</sub> film did not significantly affect biofilm development. A combination of H<sub>2</sub>O<sub>2</sub> and Ag ions (30 ppm H<sub>2</sub>O<sub>2</sub> and 30 ppb Ag ions) were as effective in preventing film growth as H<sub>2</sub>O<sub>2</sub> alone (30 ppm). Both compns. showed significant biofilm prevention as compared to Ag ions alone. Biofilm prevention by Cl (.apprx.1 ppm) was considerably higher than that of the combined disinfectant. The bacteria that survived after 48 h disinfection with H<sub>2</sub>O<sub>2</sub> and combined disinfectant showed high catalase activity hinting that H<sub>2</sub>O<sub>2</sub> and combined disinfectant may have a rather limited effect in continuous operation.

CC 61-8 (Water)

Section cross-reference(s): 60

ST biofilm hydrogen peroxide silver disinfection

IT Water purification

(biofouling control; controlling biofilm formation by hydrogen peroxide and silver combined disinfectant)

IT Fouling

(biofouling; controlling biofilm formation by hydrogen peroxide and silver combined disinfectant)

IT Sewers

Water distribution systems

(controlling biofilm formation by hydrogen peroxide and silver combined disinfectant)

IT Water purification

(disinfection; controlling biofilm formation by hydrogen peroxide and silver combined disinfectant)

IT 7440-22-4, Silver, biological studies 7722-84-1,

Hydrogen peroxide, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified);

BUU (Biological use, unclassified); BIOL (Biological study); PROC

(Process); USES (Uses)

(controlling biofilm formation by hydrogen peroxide and silver combined disinfectant)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 15 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:183133 HCAPLUS Full-text

DN 132:212409

TI Residual effect of UV-radiation: role of hydrogen-peroxide, metal and hydroxyl radical

AU Alam, M. Z. B.; Otaki, M.; Furumai, H.; Ohgaki, S.

CS Department of Urban Engineering, The University of Tokyo, Bunkyo, Tokyo, 113-8656, Japan

SO WEFTEC '99, Annual Conference & Exposition, 72nd, New Orleans, Oct. 9-13, 1999 (1999), 2702-2714 Publisher: Water Environment Federation, Alexandria, Va.  
CODEN: 68QYAC

DT Conference; (computer optical disk)

LA English

AB The objective was to clarify the mechanism of residual effect of UV irradiation and to identify the role of H<sub>2</sub>O<sub>2</sub> and hydroxyl radical in producing this residual effect. Survival of test organisms, i.e., *M. aeruginosa* and *E. coli*. K12 A/λ (F+), in UV-irradiated water was used to assess the residual effect of UV-radiation. Our study showed that UV-radiation might produce residual effect that is harmful to microorganisms. It was also shown that the residual effect might persist for a long duration. The extent of residual effect increases with increasing UV dose. However, residual effect of UV irradiation is highly dependent on the contents of the irradiated water. Presence of organic matter which can act as photosensitizer is essential for the residual effect of UV-radiation. We found that, UV irradiation can produce μM level of H<sub>2</sub>O<sub>2</sub> in the irradiated water and the H<sub>2</sub>O<sub>2</sub> production increases with increasing UV dose. Significant residual effect was observed even after the elimination of this H<sub>2</sub>O<sub>2</sub> by bovine liver catalase. It was also shown that μM level of H<sub>2</sub>O<sub>2</sub> alone is unable to produce any algicidal effect. Results suggest that other reactive species are also involved in producing the residual effect. We found that scavenging of hydroxyl radical failed to eliminate the residual effect, suggesting either that hydroxyl radicals were not involved, or that they were formed at sites within the cells where the scavengers did not reach. The extent of residual effect as well as H<sub>2</sub>O<sub>2</sub> production increases many-fold in the presence of metals especially Fe<sup>3+</sup>. Metal and H<sub>2</sub>O<sub>2</sub> play a key role in producing the residual effect of UV irradiation; but other reactive species can play significant role.

CC 61-5 (Water)  
Section cross-reference(s): 60

ST UV irradiation hydrogen peroxide metal hydroxyl radical

IT Water purification  
(UV irradiation; residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT Water purification  
(disinfection; residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT *Escherichia coli*  
*Microcystis aeruginosa*  
Organic matter

(residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT Metals, processes  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT 7722-84-1, Hydrogen peroxide, formation  
 (nonpreparative)  
 RL: FMU (Formation, unclassified); NUU (Other use, unclassified);  
 FORM (Formation, nonpreparative); USES (Uses)  
 (residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT 3352-57-6, Hydroxyl radical, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

IT 7439-89-6, Iron, processes  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (residual effect of UV-radiation and role of hydrogen-peroxide and metal and hydroxyl radical)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 16 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:62149 HCAPLUS Full-text

DN 132:218130

TI Mechanism of oxidative damage to fish red blood cells by ozone

AU Fukunaga, Kenji; Nakazono, Naoki; Suzuki, Tetsuya; Takama, Kozo

CS Department of Public Health, Kansai Medical University, Moriguchi,  
 570-8506, Japan

SO IUBMB Life (1999), 48(6), 631-634

CODEN: IULIF8; ISSN: 1521-6543

PB Taylor & Francis

DT Journal

LA English

AB The present study was conducted to elucidate the adverse effects of ozone exposure on rainbow trout (*Oncorhynchus mykiss*) red blood cells (RBCs). The authors evaluated whether Hb or Hb-derived free iron could participate in the RBC damage using an in vitro ozone exposure system. Ozone exposure induced hemolysis, formation of metHb, and RBC membrane lipid peroxidn. This RBC damage was not suppressed by the addition of a specific iron chelator (deferroxamine mesilate) to the medium but was suppressed by carbon monoxide (CO) treatment before ozone exposure. Generation of hydrogen peroxide (H2O2) in RBC was observed upon ozone exposure but was significantly suppressed by CO treatment before ozone exposure. Thus the Hb status (i.e., Hb redox condition) and H2O2 generation in RBC should play important

roles in mediating RBC damage by ozone exposure. In other words, neither ozone nor its derivative directly attacked from the outside of the cell, but ozone that penetrated through the membrane derived the reactive oxygen species from Hb inside of the cell.

CC 4-3 (Toxicology)

Section cross-reference(s): 61

IT Water purification

(disinfection; oxidative damage to fish red blood cells by ozone and mechanism)

IT 7722-84-1, Hydrogen peroxide, biological studies

RL: ADV (Adverse effect, including toxicity); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)

(oxidative damage to fish red blood cells by ozone and mechanism)

IT 70-51-9, Deferoxamine 630-08-0, Carbon monoxide, biological studies 9001-05-2, Catalase

RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(oxidative damage to fish red blood cells by ozone and mechanism)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 17 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1999:618558 HCAPLUS Full-text

DN 131:327208

TI Degradation of phenyltrifluoromethylketone in water by separate or simultaneous use of TiO2 photocatalysis and 30 or 515 kHz ultrasound

AU Theron, Philippe; Pichat, Pierre; Guillard, Chantal; Petrier, Christian; Chopin, Thierry

CS Laboratoire "Photocatalyse, Catalyse et Environnement", CNRS UMR "IFoS", Ecole Centrale de Lyon, Ecully, Fr.

SO Physical Chemistry Chemical Physics (1999), 1(19), 4663-4668

CODEN: PPCPFQ; ISSN: 1463-9076

PB Royal Society of Chemistry

DT Journal

LA English

AB To study TiO2 photocatalysis and ultrasound technologies and to assess whether advantages and synergy can be expected from their differences, phenyltrifluoromethylketone (PTMK) was selected as a test compound for pollutants generating CF3COOH, an undesirable final product. The PTMK 1st-order removal rate constant k was .apprx.14 times higher when the ultrasound frequency was 515 kHz instead of 30 kHz for the same energy, .apprx.2.5 times higher when a TiO2 sample we synthesized was used instead of TiO2 Degussa P25. On simultaneous

photocatalytic and ultrasonic treatment an increase in  $k$  by a factor between 1.4 and 1.9, depending on the  $\text{TiO}_2$  sample, was observed at 30 kHz but not at 515 kHz. On the basis of catalase enzymic effect upon  $k$ , these observations are tentatively explained by a photocatalytic  $\text{OH}^\bullet$  radical production from sonochem. formed  $\text{H}_2\text{O}_2$ , provided that the  $\text{H}_2\text{O}_2$  residence time on  $\text{TiO}_2$  is sufficient. PTMK ultrasonic pyrolysis was demonstrated by product anal. The amount of  $\text{CF}_3\text{COOH}$  was .apprx.8 times lower in sonicated solns. than in UV-irradiated  $\text{TiO}_2$  suspensions, for both frequencies and both  $\text{TiO}_2$  samples. Therefore, because of a higher  $k$  value, a high frequency ultrasonic (pre)treatment is preferable to minimize  $\text{CF}_3\text{COOH}$  formation.

CC 61-5 (Water)

Section cross-reference(s): 67

IT Water purification

(UV irradiation; degradation of phenyltrifluoromethylketone in water by

sep. and simultaneous use of titania photocatalysis and ultrasound)

IT Water purification

(photocatalytic; degradation of phenyltrifluoromethylketone in water

by sep. and simultaneous use of titania photocatalysis and ultrasound)

IT Water purification

(ultrasonic; degradation of phenyltrifluoromethylketone in water by

sep. and simultaneous use of titania photocatalysis and ultrasound)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 18 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1999:382007 HCAPLUS Full-text

DN 131:120499

TI Inactivation of *Cryptosporidium parvum* by reactive oxygen species generated by ultraviolet irradiation

AU Chauret, Christian; Boardman, Rebecca

CS Biological and Physical Sciences, Indiana University Kokomo, Kokomo, IN, 46904, USA

SO Proceedings - Water Quality Technology Conference (1998)  
1859-1866

CODEN: PWQCD2; ISSN: 0164-0755

PB American Water Works Association

DT Journal; (computer optical disk)

LA English

AB *Cryptosporidium parvum* inactivation expts. were performed by testing the protective effect of reactive oxygen species-degrading enzymes

and scavengers on *Cryptosporidium parvum* oocyst viability in the presence of UV irradiation. Viability was measured by using two vital staining procedures: DAPI/PI and SYTO staining. The following enzymes/scavengers (or combinations thereof) were added to the oocyst suspensions in phosphate-buffered saline (PBS) or natural water and incubated for 24 and 48 h at 20° either in the dark or with continuous exposure to UV irradiation: Cu-Zn superoxide dismutase from bovine erythrocytes, bovine liver catalase, superoxide dismutase/catalase, and thiourea. The UV light intensity (365 nm) was adjusted to 3.5 mW/cm<sup>2</sup>. Thiourea (100mM), a hydroxyl radical scavenger, clearly exhibited the most protective effect, suggesting that hydroxyl radicals were generated by UV irradiation in both PBS and natural water and that they exerted an effect on oocyst viability. In addition, catalase (800 U/mL), which breaks down hydrogen peroxide, also exhibited a significant protective effect on oocyst viability. On the other hand, superoxide dismutase (900 U/mL), which breaks down superoxide anions to hydrogen peroxide, had no significant protective effect, suggesting that hydrogen peroxide was involved in phototoxicity. The combination of superoxide dismutase and catalase exhibited a greater photoprotective effect in Lake Michigan samples than in PBS, indicating that the production of superoxide anions and(or) hydrogen peroxide was less significant in Lake Michigan than in PBS, when subjected to UV irradiation. In conclusion, the present study shows that certain reactive oxygen species, especially hydroxyl radicals and hydrogen peroxide, were associated with the inactivation (phototoxicity) of *Cryptosporidium parvum* oocysts observed when these parasites were exposed to UV irradiation.

- CC 61-5 (Water)  
Section cross-reference(s): 4, 10
- IT Water purification  
(UV irradiation; inactivation of *Cryptosporidium parvum* by reactive oxygen species generated by UV irradiation)
- IT Water purification  
(disinfection; inactivation of *Cryptosporidium parvum* by reactive oxygen species generated by UV irradiation)
- IT 3352-57-6, Hydroxyl, biological studies 7722-84-1,  
Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), biological studies  
RL: ADV (Adverse effect, including toxicity); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)  
(inactivation of *Cryptosporidium parvum* by reactive oxygen species generated by UV irradiation)
- IT 62-56-6, Thiourea, miscellaneous 9001-05-2,  
Catalase  
RL: MSC (Miscellaneous)

(photoprotective agent; inactivation of *Cryptosporidium parvum* by reactive oxygen species generated by UV irradiation)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 19 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 1998:728208 HCAPLUS Full-text  
DN 130:43054  
TI Special medical electrolyzed hydrogen water for drinking  
IN Kitada, Atsushi  
PA Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	-----				
PI	JP 10296262	A	19981110	JP 1997-137382	199704 22

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PRAI JP 1997-137382 19970422 <--

AB The title water is produced in an electrolysis tank having 2 neg. electrode chambers partitioned by a porous neutral membrane (e.g., made of polyhalogenated vinyl or vinylidene), by electrolysis of electrolyte solution. The produced hydrogen water is suitable for drinking to eliminate activated oxygen in blood, measured by hydrogen-peroxide (catalase) in mouse, for improve antioxidant mRNA.

IC ICM C02F001-46  
ICS A61K033-00

CC 61-5 (Water)  
Section cross-reference(s): 13

IT Water purification  
(apparatus; special medical electrolyzed hydrogen water for drinking)

IT 9001-05-2, Catalase  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(special medical electrolyzed hydrogen water for drinking)

L62 ANSWER 20 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 1998:274617 HCAPLUS Full-text  
DN 129:19459  
OREF 129:4081a,4084a  
TI Method for treating waste solution containing hydrogen peroxide and peracetic acid using catalase with pH

adjustment  
 IN Nanba, Akira; Suzuki, Satomi; Yoshida, Akio  
 PA Mitsubishi Gas Chemical Co., Inc., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
PI	JP 10113670	A	19980506	JP 1996-267327	199610 08

<--

JP 3755554                      B2              20060315  
 PRAI JP 1996-267327                      19961008 <--

AB The method is carried out by adjusting solution to pH  $\geq 3$  by sodium hydroxide, then adding catalase capable of decomposing hydrogen peroxide and peracetic acid.

IC ICM C02F001-58  
 ICS C02F001-58; C02F001-00

CC 61-5 (Water)  
 Section cross-reference(s): 60

ST wastewater treatment hydrogen peroxide decomp  
 catalase; water purifn peracetic acid  
 decomp catalase

IT Wastewater treatment  
 Water purification  
 (method for treating waste solution containing hydrogen peroxide and peracetic acid using catalase with pH adjustment)

IT 1310-73-2, Sodium hydroxide, uses 9001-05-2, Catalase  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (method for treating waste solution containing hydrogen peroxide and peracetic acid using catalase with pH adjustment)

IT 79-21-0, Peracetic acid 7722-84-1, Hydrogen peroxide, processes  
 RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)  
 (method for treating waste solution containing hydrogen peroxide and peracetic acid using catalase with pH adjustment)

AN 1998:268442 HCAPLUS Full-text  
 DN 128:326258  
 OREF 128:64590h,64591a  
 TI Biochemical media system for reducing pollution  
 IN Reddy, Malireddy S.; Reddy, Syama M.  
 PA Reddy, Malireddy S., USA; Reddy, Syama M.  
 SO PCT Int. Appl., 55 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	WO 9817592	A1	19980430	WO 1997-US18737	199710 21
				<--	
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 5876990	A	19990302	US 1996-731886	199610 22
				<--	
	AU 9749857	A	19980515	AU 1997-49857	199710 21
				<--	
	EP 946427	A1	19991006	EP 1997-912750	199710 21
				<--	
	EP 946427	B1	20040721		
	R: DE, DK, FR, GB, IE				
	TW 570975	B	20040111	TW 1997-86115579	199710 22
				<--	
PRAI	US 1996-731886	A	19961022	<--	
	WO 1997-US18737	W	19971021	<--	

AB A first media provides an oxygen inducer such as catalase, bound and stabilized in pellet form to dissipate slowly into aqueous surroundings. A second media provides an oxygen supplier such as a peroxide, stabilized by combination with a proteinaceous compound such as urea and bound in a matrix that limits oxygen release. The two media are combined in aqueous environment to generate nascent oxygen at a modulated rate such that the oxygen is efficiently absorbed into the surrounding aqueous environment, promoting growth of aerobic species and reducing biol. pollution. Specific adaptations demonstrate benefits of use in shrimp of fish ponds, raw milk, fruit juice, fresh food, silage and animal feed, fertilizer, plumbing systems, and grease traps. When used in ponds, further adaptations reduce algae and phytoplankton populations.

IC ICM C02F001-72  
ICS C02F003-34

CC 61-5 (Water)  
Section cross-reference(s): 5, 16, 17, 19, 60

ST water purifn biochem; feed treatment oxygen inducer; aq environment oxygen inducer

IT Wastewater treatment  
Water purification  
(biol.; biochem. media system for adding oxygen, promoting biol. activity, and reducing pollution)

IT 50-81-7, L-Ascorbic acid, biological studies 57-13-6, Urea, biological studies 63-42-3 124-43-6 137-40-6 144-55-8, Carbonic acid monosodium salt, biological studies 302-04-5, Thiocyanate, biological studies 471-34-1, Carbonic acid calcium salt (1:1), biological studies 1313-60-6, Sodium peroxide (Na2O2) 1335-26-8, Magnesium peroxide 2650-18-2 7429-90-5, Aluminum, biological studies 7429-90-5D, Aluminum, salts 7439-95-4, Magnesium, biological studies 7439-95-4D, Magnesium, compds. 7440-70-2, Calcium, biological studies 7440-70-2D, Calcium, compds. 7631-86-9, Silica, biological studies 7681-38-1 7722-84-1, Hydrogen peroxide (H2O2), biological studies 7758-98-7, Sulfuric acid copper(2+) salt (1:1), biological studies 9000-30-0, Guar gum 9000-92-4, Amylase 9001-05-2, Catalase 9001-37-0 9001-62-1 9001-92-7, Proteinase 9003-99-0, Peroxidase 9005-32-7, Alginic acid 9005-53-2, Lignin, biological studies 9012-54-8, Cellulase 9028-79-9 9031-11-2 9032-75-1, Polygalacturonase 15630-89-4

RL: BPR (Biological process); BSU (Biological study, unclassified); NUU (Other use, unclassified); BIOL (Biological study); PROC (Process); USES (Uses)  
(biochem. media system for adding oxygen, promoting biol. activity, and reducing pollution)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 22 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1997:733554 HCAPLUS Full-text  
 DN 128:7158  
 OREF 128:1375a,1378a  
 TI Effects of hydrogen peroxide residuals on  
 biologically active filters  
 AU Urfer, Daniel; Huck, Peter M.  
 CS NSERC Chair in Water Treatment, Dep. Civil Eng., Univ. Waterloo,  
 Waterloo, ON, N2L 3G1, Can.  
 SO Ozone: Science & Engineering (1997), 19(4), 371-386  
 CODEN: OZSEDS; ISSN: 0191-9512  
 PB Lewis Publishers  
 DT Journal  
 LA English  
 AB The effect of H2O2 residuals on the biol. removal of certain  
 biodegradable components in biol. active filters was studied. Data  
 were collected at lab scale using 2 parallel anthracite/sand filters.  
 Both filter influents (dechlorinated tap water) were dosed with a  
 biodegradable organic matter (BOM) cocktail; 1 filter received addnl.  
 H2O2 at an influent concentration of .apprx.1 mg/L. Measured  
 parameters included carboxylic acids and H2O2 residuals. Results  
 showed that H2O2 residuals (.apprx.1 mg/L) did not lead to a major  
 inhibition of the biol. removal of acetate and formate anions. After  
 a period of biol. acclimatization (colonization), H2O2 was removed  
 rapidly within the biol. filter, probably as a result of its reaction  
 with the biomass or with catalase produced by certain bacteria.  
 CC 61-5 (Water)  
 ST hydrogen peroxide residual effect biofilter;  
 water purifn biofiltration hydrogen  
 peroxide residual; ozonization disinfection water  
 purifn peroxide residual  
 IT Organic matter  
 (biodegradable; ozonization disinfection hydrogen  
 peroxide residuals effect on active biofilters)  
 IT Water purification  
 (disinfection; ozonization disinfection hydrogen  
 peroxide residuals effect on active biofilters)  
 IT Water purification  
 (filtration, bio-, ozonization disinfection hydrogen  
 peroxide residuals effect on active biofilters)  
 IT Aldehydes, processes  
 RL: OCU (Occurrence, unclassified); PEP (Physical, engineering or  
 chemical process); REM (Removal or disposal); OCCU (Occurrence);  
 PROC (Process)  
 (ozonization disinfection hydrogen peroxide

residuals effect on active biofilters)

IT Water purification  
(ozonization; ozonization disinfection hydrogen peroxide residuals effect on active biofilters)

IT 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes  
RL: OCU (Occurrence, unclassified); PEP (Physical, engineering or chemical process); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)  
(ozonization disinfection hydrogen peroxide residuals effect on active biofilters)

IT 7722-84-1, Hydrogen peroxide, reactions  
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); REM (Removal or disposal); PROC (Process); RACT (Reactant or reagent)  
(ozonization disinfection hydrogen peroxide residuals effect on active biofilters)

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 23 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 1997:542053 HCAPLUS Full-text  
DN 127:238828  
OREF 127:46501a,46504a  
TI Treatment of chromium-containing wastewaters using hydrogen peroxide  
IN Oshima, Toyotsugu; Nanba, Satoshi; Yoshida, Akio  
PA Mitsubishi Gas Chemical Co., Inc., Japan  
SO Jpn. Kokai Tokkyo Koho, 3 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	JP 09206763	A	19970812	JP 1996-21015	19960207

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PRAI JP 1996-21015 19960207 <--

AB The treatment is carried out by reduction of Cr (VI) to Cr (III) in the wastewater by H<sub>2</sub>O<sub>2</sub> in the presence of sulfuric acid, followed by decomposition of residual H<sub>2</sub>O<sub>2</sub> using catalase at pH ≤5.

IC ICM C02F001-70  
ICS C02F001-00; C02F001-58; C02F001-62

CC 61-5 (Water)  
Section cross-reference(s): 60

ST wastewater treatment chromium redn hydrogen  
peroxide; water chromium redn hydrogen  
peroxide catalase

IT Wastewater treatment  
Water purification  
(treatment of chromium-containing wastewaters using hydrogen  
peroxide)

IT 7664-93-9, Sulfuric acid, uses 7722-84-1, Hydrogen  
peroxide, uses 9001-05-2, Catalase  
RL: NUU (Other use, unclassified); USES (Uses)  
(treatment of chromium-containing wastewaters using hydrogen  
peroxide)

IT 7440-47-3, Chromium, processes  
RL: PEP (Physical, engineering or chemical process); REM (Removal or  
disposal); PROC (Process)  
(treatment of chromium-containing wastewaters using hydrogen  
peroxide)

L62 ANSWER 24 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1997:239025 HCAPLUS Full-text

DN 126:314721

OREF 126:60981a,60984a

TI Microbial adaptation to hydrogen peroxide and  
biodegradation of aromatic hydrocarbons

AU Fiorenza, S.; Ward, C. H.

CS Dep. of Environmental Science and Engineering, Rice Univ., Houston,  
TX, 77005-1892, USA

SO Journal of Industrial Microbiology & Biotechnology (1997),  
18(2/3), 140-151  
CODEN: JIMBFL

PB Stockton

DT Journal

LA English

AB This research investigated microbial responses to bioremediation with  
H<sub>2</sub>O<sub>2</sub> as a supplemental O source. Columns containing aquifer material  
were continuously supplied with benzene, toluene, ethylbenzene, o-  
xylene and m-xylene (BTEX) and H<sub>2</sub>O<sub>2</sub> in increasing concentration. The  
microbial responses studied were changes in microbial nos., community  
structure, degradative ability, and activity of catalase and  
superoxide dismutase (SOD). Both adaptation to H<sub>2</sub>O<sub>2</sub> and stress-  
related consequences were observed. Adaptation to H<sub>2</sub>O<sub>2</sub> was  
demonstrated by increased catalase and SOD activity during the course  
of the experiment. The microbial community in the untreated aquifer  
material used in the columns consisted primarily of *Corynebacterium*  
sp and *Pseudomonas fluorescens*. Following amendment with 500 mg  
H<sub>2</sub>O<sub>2</sub>/L, the column inlet was dominated by *P. fluorescens* with few  
*Corynebacterium* sp present; *Xanthomonas maltophilia* dominated the

middle and outlet sections. Di-Me phenols detected in the effluent of 2 of the biol. active columns were probably metabolic products. The ratio of O to BTEX mass consumed was .apprx.0.3 before H<sub>2</sub>O<sub>2</sub> addition, 0.7 following 10 mg H<sub>2</sub>O<sub>2</sub>/L supplementation, and 2.6 over the course of the experiment Abiotic decomposition of H<sub>2</sub>O<sub>2</sub> was observed in a sterile column and impeded flow at a feed concentration of 500 mg H<sub>2</sub>O<sub>2</sub>/L. Increasing the BTEX concentration supplied to the biol. active columns eliminated flow disruptions by satisfying the C and energy demand of the O<sub>2</sub> evolved by increasing catalase activity.

- CC 10-6 (Microbial, Algal, and Fungal Biochemistry)  
Section cross-reference(s): 61
- ST bioremediation water arom hydrocarbon bacteria; bacteria adaptation  
hydrogen peroxide arom hydrocarbon
- IT Remediation  
(bioremediation; microbial adaptation to hydrogen  
peroxide and biodegrdn. of aromatic hydrocarbons)
- IT Adaptation, microbial  
Bacteria (Eubacteria)  
Corynebacterium  
Pseudomonas fluorescens  
Stenotrophomonas maltophilia  
Water purification  
(microbial adaptation to hydrogen peroxide  
and biodegrdn. of aromatic hydrocarbons)
- IT Aromatic hydrocarbons, biological studies  
RL: BPR (Biological process); BSU (Biological study, unclassified);  
REM (Removal or disposal); BIOL (Biological study); PROC (Process)  
(microbial adaptation to hydrogen peroxide  
and biodegrdn. of aromatic hydrocarbons)
- IT 7722-84-1, Hydrogen peroxide, biological  
studies  
RL: BAC (Biological activity or effector, except adverse); BSU  
(Biological study, unclassified); BIOL (Biological study)  
(microbial adaptation to hydrogen peroxide  
and biodegrdn. of aromatic hydrocarbons)
- IT 71-43-2, Benzene, biological studies 95-47-6, o-Xylene, biological  
studies 100-41-4, Ethylbenzene, biological studies 108-38-3,  
biological studies 108-88-3, Toluene, biological studies  
RL: BPR (Biological process); BSU (Biological study, unclassified);  
REM (Removal or disposal); BIOL (Biological study); PROC (Process)  
(microbial adaptation to hydrogen peroxide  
and biodegrdn. of aromatic hydrocarbons)

TI Response of *Pseudomonas aeruginosa* PAO following exposure to hydrogen peroxide  
 AU Pietersen, B.; Brozel, V. S.; Cloete, T. E.  
 CS Department of Microbiology and Plant Pathology, University of Pretoria, Pretoria, 0002, S. Afr.  
 SO Water SA (1996), 22(3), 239-244  
 CODEN: WASADV; ISSN: 0378-4738  
 PB Water Research Commission  
 DT Journal  
 LA English  
 AB The aim of the work was to investigate the response of *P. aeruginosa* following exposure to H<sub>2</sub>O<sub>2</sub> during both logarithmic and stationary phases of growth. The catalase levels were determined following exposure to H<sub>2</sub>O<sub>2</sub> and the general cellular response was investigated by pulse-labeling using 35S methionine. Stationary phase cells did not demonstrate a stress response to H<sub>2</sub>O<sub>2</sub>. Where de novo protein synthesis was inhibited, cells were less susceptible to growth inhibition, indicating an inverse stress response to H<sub>2</sub>O<sub>2</sub> in *P. aeruginosa*. The addition of H<sub>2</sub>O<sub>2</sub> to cultures in logarithmic growth phase resulted in the induction of a short lag phase. The growth rate following a return to logarithmic growth phase was lower than before addition of H<sub>2</sub>O<sub>2</sub>, and was inversely related to the concentration of H<sub>2</sub>O<sub>2</sub> added. Oxidizing stress elicited de novo synthesis of four proteins within 5 min following exposure to stress. Cellular catalase levels doubled from 16 U·mg<sup>-1</sup> protein to over 30 U·mg<sup>-1</sup> protein within 10 min following exposure to oxidizing stress but no new catalase isoenzymes were induced. H<sub>2</sub>O<sub>2</sub> was demonstrated to interrupt cell division as well as to decrease the ensuing rate of division in *P. aeruginosa*, and the culture did not exhibit an effective stress response to H<sub>2</sub>O<sub>2</sub>.  
 CC 61-5 (Water)  
 ST Section cross-reference(s): 10  
 hydrogen peroxide *Pseudomonas aeruginosa*  
 response; disinfection hydrogen peroxide  
*Pseudomonas aeruginosa*  
 IT *Pseudomonas aeruginosa*  
 (response of *Pseudomonas aeruginosa* following exposure to hydrogen peroxide)  
 IT Wastewater treatment  
 Water purification  
 (disinfection, response of *Pseudomonas aeruginosa* following exposure to hydrogen peroxide)  
 IT Wastewater treatment  
 Water purification  
 (oxidation, response of *Pseudomonas aeruginosa* following exposure to hydrogen peroxide)

IT 9001-05-2, Catalase  
 RL: BUU (Biological use, unclassified); BIOL (Biological study);  
 USES (Uses)  
 (response of *Pseudomonas aeruginosa* following exposure to  
 hydrogen peroxide)

L62 ANSWER 26 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1995:944786 HCAPLUS Full-text  
 DN 123:349427  
 OREF 123:62513a,62516a

TI Causes of resistance of slime-forming and non-slime-forming water  
 bacteria to chlorine and hydrogen peroxide

AU Grobe, Susanne; Wingender, Jost  
 CS Rheinisch-Westfälisches Institut Wasserchemie,  
 Gerhard-Mercator-Universität, Muelheim an der Ruhr, 45476, Germany  
 SO Stuttgarter Berichte zur Siedlungswasserwirtschaft (1995),  
 133, 65-92  
 CODEN: SBSWBO; ISSN: 0585-7953

DT Journal; General Review  
 LA German  
 AB A review with 36 refs., covers biol. properties, nutrient deficiency,  
 formation of aggregates, and slime and biofilm formation as factors  
 in chlorine resistance and biol. properties, slime formation,  
 catalase activity, and structure of bacterial membranes as factors in  
 hydrogen peroxide resistance of water bacteria.

CC 61-0 (Water)  
 Section cross-reference(s): 10

ST review water disinfection bacteria resistance; chlorine resistance  
 bacteria water disinfection review; hydrogen  
 peroxide resistance water disinfection review

IT Water purification  
 (biofouling control, resistance of bacteria to chlorine and  
 hydrogen peroxide in water disinfection for  
 biofouling control)

IT Water purification  
 (chlorination, resistance of bacteria to chlorine and  
 hydrogen peroxide in water disinfection for  
 biofouling control)

IT Water purification  
 (disinfection, resistance of bacteria to chlorine and  
 hydrogen peroxide in water disinfection for  
 biofouling control)

IT Water purification  
 (oxidation, resistance of bacteria to chlorine and hydrogen  
 peroxide in water disinfection for biofouling control)

IT 7722-84-1, Hydrogen peroxide, biological  
 studies

RL: BUU (Biological use, unclassified); BIOL (Biological study);  
USES (Uses)  
    (resistance of bacteria to chlorine and hydrogen  
    peroxide in water disinfection for biofouling control)

L62 ANSWER 27 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1994:586651 HCAPLUS Full-text

DN 121:186651

OREF 121:33781a,33784a

TI Use of catalase and superoxide dismutase to assess the  
roles of hydrogen peroxide and superoxide in the  
TiO<sub>2</sub> or ZnO photocatalytic destruction of 1,2-dimethoxybenzene in  
water

AU Amalric, L.; Guillard, C.; Pichat, P.

CS Ecole Centrale de Lyon, CNRS "Photocatalyse, Catalyse et  
Environnement", Ecully, 69131, Fr.

SO Research on Chemical Intermediates (1994), 20(6), 579-94  
CODEN: RCINEE; ISSN: 0922-6168

DT Journal

LA English

AB The effect of 2 antioxidant enzymes on the rate of disappearance, *r*,  
of the pollutant, 1,2-dimethoxybenzene (1,2-DMB), in UV-irradiated ( $\lambda$   
> 340 nm) TiO<sub>2</sub> or ZnO aqueous suspensions was determined. Catalase,  
which catalyzes the overall reaction  $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ , caused a  
relatively moderate decrease in *r* for TiO<sub>2</sub> and no effect for ZnO,  
showing that H<sub>2</sub>O<sub>2</sub> formed in situ is not essential for pollutant  
removal. Added H<sub>2</sub>O<sub>2</sub> had a neg. effect on ZnO and either favorable or  
unfavorable effect on TiO<sub>2</sub> depending on the initial  $[\text{H}_2\text{O}_2]/[\text{1,2-DMB}]$   
ratio due to competition between these compds. for adsorption sites  
and/or photoproduced holes, formation of addnl. OH<sup>-</sup> radicals, and the  
detrimental modification of the TiO<sub>2</sub> surface. Favorable and  
unfavorable effects of added H<sub>2</sub>O<sub>2</sub> were suppressed by catalase. The  
detrimental effect on *r* of superoxide dismutase (SOD), which  
catalyzes the overall reaction  $2\text{O}_2^- + 2\text{H}^+ \rightarrow \text{O}_2 + \text{H}_2\text{O}_2$ , was very  
important for both TiO<sub>2</sub> and ZnO. It is inferred that it stems from  
the catalytic action of SOD and not from competitive photocatalytic  
destruction of 1,2-DMB and SOD or from H<sub>2</sub>O<sub>2</sub> formation. Therefore,  
these results point to the essential role of the O<sub>2</sub><sup>-</sup> radical-anion as  
an active species in the photocatalytic degradation of the pollutant;  
this role is tentatively discussed, particularly with respect to  
formation of the 1,2-DMB<sup>+</sup> radical-cation.

CC 61-5 (Water)

Section cross-reference(s): 67

ST dimethoxybenzene photocatalysis water purifn;  
titania catalysis dimethoxybenzene photodegrdn; zinc oxide catalysis  
dimethoxybenzene photodegrdn; superoxide dismutase effect  
photodegrdn dimethoxybenzene; catalase effect photodegrdn

dimethoxybenzene; hydrogen peroxide dismutation  
photodegrdn dimethoxybenzene; dismutation superoxide ion photodegrdn  
dimethoxybenzene

- IT Oxidation catalysts  
(photochem., use of catalase and superoxide dismutase  
to assess hydrogen peroxide and superoxide  
effect on photodegrdn. of 1,2-dimethoxybenzene over titania or  
zinc oxide)
- IT Water purification  
(photolysis, use of catalase and superoxide dismutase  
to assess hydrogen peroxide and superoxide  
effect on photodegrdn. of 1,2-dimethoxybenzene over titania or  
zinc oxide)
- IT 90-05-1, 2-Methoxyphenol 2033-89-8, 3,4-Dimethoxyphenol  
5150-42-5, 2,3-Dimethoxyphenol  
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
(reaction product from photodegrdn. of 1,2-methoxybenzene over  
titania or zinc oxide in presence of catalase or  
superoxide dismutase)
- IT 1314-13-2, Zinc oxide, uses 13463-67-7, Titania, uses  
RL: CAT (Catalyst use); USES (Uses)  
(use of catalase and superoxide dismutase to assess  
hydrogen peroxide and superoxide effect on  
photodegrdn. of 1,2-dimethoxybenzene over titania or zinc oxide)
- IT 9001-05-2, Catalase 9054-89-1, Superoxide  
dismutase  
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent);  
USES (Uses)  
(use of catalase and superoxide dismutase to assess  
hydrogen peroxide and superoxide effect on  
photodegrdn. of 1,2-dimethoxybenzene over titania or zinc oxide)
- IT 91-16-7, 1,2-Dimethoxybenzene  
RL: POL (Pollutant); RCT (Reactant); OCCU (Occurrence); RACT  
(Reactant or reagent)  
(use of catalase and superoxide dismutase to assess  
hydrogen peroxide and superoxide effect on  
photodegrdn. of 1,2-dimethoxybenzene over titania or zinc oxide)
- IT 7722-84-1, Hydrogen peroxide, reactions  
11062-77-4, Superoxide ion  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(use of catalase and superoxide dismutase to assess  
hydrogen peroxide and superoxide effect on  
photodegrdn. of 1,2-dimethoxybenzene over titania or zinc oxide)

OREF 121:31635a,31638a

TI Catalase released from beneficial and plant-pathogenic  
pseudomonads by water and chloroform treatments

AU Pounder, J. I.; Anderson, A. J.

CS Biol. Dep., Utah State Univ., Logan, UT, 84322-5305, USA

SO Canadian Journal of Microbiology (1994), 40(8), 630-6

CODEN: CJMIAZ; ISSN: 0008-4166

DT Journal

LA English

AB Survival of pseudomonads during plant colonization may involve bacterial catalases to degrade the hydrogen peroxide produced by the plant. The specific activities of catalases in lysates from two saprophytic isolates of *Pseudomonas putida* and *Pseudomonas fluorescens* and three races of *Pseudomonas syringae* pv. *glycinea* were similar. To explore the location of the bacterial catalases, cells of the pathogenic and saprophytic pseudomonads were treated with chloroform, which is reported to release periplasmic proteins. Although catalase was released by chloroform treatment, the cytoplasmic enzymes isocitrate dehydrogenase, superoxide dismutase, and glucose-6-phosphate dehydrogenase were also detected. These proteins may have come from lysis of a small proportion of the cells rather than the periplasm. Water treatment of cells also released amts. of protein similar to those derived from chloroform treatment. Similar responses were found from both pathogenic and saprophytic strains. The release of catalase and proteins from the leaf pathogen *P. syringae* pv. *glycinea* race 0 and the root-associated saprophyte *P. putida* decreased as the cultures aged. With *P. putida* and *P. syringae* pv. *glycinea* race 0, the single isoenzyme of catalase released by water and chloroform treatment also was detected in lysates. Addnl. catalase isoenzymes were present in lysates as the cultures aged.

CC 10-1 (Microbial, Algal, and Fungal Biochemistry)

ST catalase localization saprophytic pathogenic pseudomonad;  
water catalase release saprophytic pathogenic pseudomonad;  
chloroform catalase release saprophytic pathogenic  
pseudomonad

IT Microorganism adaptation  
(osmotic shock; catalase water-mediated release from  
saprophytic and pathogenic pseudomonads)

IT *Pseudomonas syringae* *glycinea*  
(pathogenic leaf-colonizing races; catalase chloroform-  
and water-mediated release and activity and localization in  
saprophytic and pathogenic pseudomonads)

IT *Pseudomonas fluorescens*

*Pseudomonas putida*  
(saprophytic root-colonizing; catalase chloroform- and  
water-mediated release and activity and localization in

saprophytic and pathogenic pseudomonads)

IT Osmotic pressure  
(shock; catalase water-mediated release from  
saprophytic and pathogenic pseudomonads)

IT Cytoplasm  
(cytosol, catalase chloroform- and water-mediated  
release and localization in saprophytic and pathogenic  
pseudomonads)

IT Organelle  
(periplasm, catalase chloroform- and water-mediated  
release and localization in saprophytic and pathogenic  
pseudomonads)

IT Microorganism development  
(senescence, catalase chloroform- and water-mediated  
release and activity in saprophytic and pathogenic pseudomonads)

IT 9001-05-2, Catalase  
RL: BOC (Biological occurrence); BSU (Biological study,  
unclassified); BIOL (Biological study); OCCU (Occurrence)  
(isoenzymes; catalase chloroform- and water-mediated  
release and activity and localization in saprophytic and  
pathogenic pseudomonads)

IT 67-66-3, Chloroform, biological studies 7732-18-5, Water,  
biological studies  
RL: BUU (Biological use, unclassified); BIOL (Biological study);  
USES (Uses)  
(release and localization of catalase of saprophytic  
and pathogenic pseudomonads)

L62 ANSWER 29 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1994:172571 HCAPLUS Full-text

DN 120:172571

OREF 120:30327a,30330a

TI Removal of phenols from aqueous solution with tyrosinase catalysis

IN Nakamoto, Shinya

PA Nippon Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	
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PI	JP 05293477	A	19931109	JP 1992-121035	

199204

16

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PRAI JP 1992-121035 19920416 <--  
AB To avoid vigorous agitation and aeration in (waste)water treatment,  
the phenol-containing solution is added with tyrosinase, catalase,  
and H<sub>2</sub>O<sub>2</sub> to catalytic reacting O with phenols for removal.  
IC ICM C02F001-72  
ICS C02F001-00; C02F001-58  
CC 60-1 (Waste Treatment and Disposal)  
Section cross-reference(s): 61  
IT Phenols, miscellaneous  
RL: REM (Removal or disposal); PROC (Process)  
(removal of, from aqueous solution, by hydrogen  
peroxide, tyrosinase catalysis in)  
IT Wastewater treatment  
Water purification  
(oxidation, for phenols removal, by hydrogen  
peroxide, tyrosinase catalysis in)  
IT 9001-05-2, Catalase 9002-10-2, Tyrosinase  
RL: PROC (Process)  
(in phenol removal from aqueous solution with hydrogen  
peroxide)  
IT 7722-84-1, Hydrogen peroxide, uses  
RL: USES (Uses)  
(in phenol removal from aqueous solution with tyrosinase  
catalysis)

L62 ANSWER 30 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 1994:37550 HCAPLUS Full-text  
DN 120:37550  
OREF 120:6851a,6854a  
TI Catalase activity in wastewater  
AU Hosetti, B. B.; Frost, S.  
CS Environ. Sci., Kuvempu Univ., Shimoga, 577 203, India  
SO Water Research (1994), 28(2), 497-500  
CODEN: WATRAG; ISSN: 0043-1354  
DT Journal  
LA English  
AB Measurements of catalase permit the study of organic change and  
microbial d. The technique is used to measure the rate of self  
purification of 2 rivers and sets of stabilization ponds in India and  
activated sludge plant and slurry tanks in Britain. Catalase surveys  
have been widely used to evaluate wastewater quality and results  
compare closely with those using long standing techniques to measure  
BOD and E. coli. Catalase is active at pH 4-10 and a temperature  
range which accommodates tropical and temperate circumstances. The  
test requires only minimal time to complete using simple reagents.  
Its full potential is realized only when comparative models relate

results to standard procedures and electronic catalase meters become available.

CC 61-1 (Water)  
Section cross-reference(s): 7, 60, 80  
ST catalase activity detn water wastewater  
IT Wastewater  
(catalase activity in, BOD and E. coli relation with)  
IT Wastewater treatment  
(activated-sludge process, catalase activity in)  
IT Wastewater treatment  
(lagooning, catalase activity in, BOD and E. coli  
relation with)  
IT Water purification  
(natural, of river water, catalase activity in, BOD and  
E. coli relation with)  
IT Waters, natural  
(river, catalase activity in, BOD and E. coli relation  
with)  
IT 7732-18-5, Water, analysis  
RL: ANST (Analytical study)  
(catalase activity determination in wastewater and river,  
hydrogen peroxide method in)  
IT 9001-05-2, Catalase  
RL: OCCU (Occurrence)  
(determination of activity of, in wastewater and river water,  
hydrogen peroxide method in)

L62 ANSWER 31 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1990:83817 HCAPLUS Full-text

DN 112:83817

OREF 112:14187a,14190a

TI Biofouling prevention in seawater cooling system

IN Fujino, Kozo

PA Kurita Water Industries, Ltd., Japan

SO Jpn. Kokai Tokyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	JP 01094997	A	19890413	JP 1987-253284	198710 07
PRAI	JP 1987-253284		19871007	<--	

AB Biofouling in the piping of a seawater cooling system can be prevented by dosing the seawater with 0.05-3.5 ppm H<sub>2</sub>O<sub>2</sub> and ≥0.01 ppm catalase to inhibit the deposition of marine biota, e.g., shellfish. Thus, a seawater supply stream was dosed with 0.5 ppm H<sub>2</sub>O<sub>2</sub> and 0.05 ppm catalase at a flow rate of 0.3 m/s for 80 days; the amount of shellfish deposition was 20 cells/m<sup>2</sup>, vs. 1000 cells/m<sup>2</sup> for a control using H<sub>2</sub>O<sub>2</sub> alone.

IC ICM C02F001-50

CC 61-8 (Water)

ST seawater cooling piping biofouling prevention; hydrogen peroxide catalase seawater scaling

IT Enzyme functional sites  
(of catalase, in treatment of seawater, for preventing biofouling)

IT Water purification  
(biofouling control, in seawater cooling system, hydrogen peroxide-catalase dosage for)

IT Water purification  
(scale control, in seawater cooling system, hydrogen peroxide-catalase dosage for)

IT 9001-05-2, Catalase  
RL: OCCU (Occurrence)  
(hydrogen peroxide and, for treatment of seawater to prevent biofouling in seawater supply piping)

IT 7722-84-1, Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), uses and miscellaneous  
RL: USES (Uses)  
(seawater treated with catalase and, for preventing biofouling in seawater supply piping)

L62 ANSWER 32 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1989:218627 HCAPLUS Full-text

DN 110:218627

OREF 110:36191a,36194a

TI Excessive bacterial decomposition of hydrogen peroxide during enhanced biodegradation

AU Spain, J. C.; Milligan, J. D.; Downey, D. C.; Slaughter, J. K.

CS Air Force Eng. Serv. Lab., Tyndall AFB, FL, 32403-6001, USA

SO Ground Water (1989), 27(2), 163-7  
CODEN: GRWAAP; ISSN: 0017-467X

DT Journal

LA English

AB Enhanced aerobic biodegrdn. of hydrocarbons in the subsurface requires large quantities of O to be distributed throughout the contaminated zone. Although H<sub>2</sub>O<sub>2</sub> is a commonly used source of O, its uncontrolled decomposition can result in wasteful off-gassing. Studies indicate that bacterial catalase is responsible for rapid

decomposition of H2O2 at a jet fuel spill site undergoing enhanced biodegrdn. Catalase-pos. bacteria found in infiltration galleries have dramatically decreased the useful O supplied to the subsurface.

CC 61-2 (Water)

ST Section cross-reference(s): 10, 51

ST groundwater pollution hydrocarbon aerobic biodegrdn; hydrogen peroxide decompn hydrocarbon biodegrdn

IT Petroleum

RL: REM (Removal or disposal); PROC (Process)

(removal of, from groundwater, aerobic processes in, bacterial decomposition of hydrogen peroxide in relation to)

IT Decomposition

(biochem., of hydrogen peroxide, hydrocarbon enhanced aerobic biodegrdn. in groundwater in relation to)

IT Water purification

(biol. oxidation, in situ aeration, of groundwater, enhanced hydrocarbon biodegrdn. in, hydrogen peroxide biol. decomposition in relation to)

IT 7722-84-1, Hydrogen peroxide, biological studies

RL: RCT (Reactant); RACT (Reactant or reagent)

(bacterial decomposition of, hydrocarbon aerobic biodegrdn. in groundwater in relation to)

IT 9001-05-2, Catalase

RL: OCCU (Occurrence)

(hydrogen peroxide decomposition in presence of, groundwater hydrocarbon aerobic biodegrdn. in relation to)

L62 ANSWER 33 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1989:198672 HCAPLUS Full-text

DN 110:198672

OREF 110:32891a,32894a

TI Treatment of hydrogen peroxide-containing wash water

IN Shimamune, Shizuo; Dohara, Hiromi

PA Mitsubishi Gas Chemical Co., Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 01011689	A	19890117	JP 1987-167689	

198707  
07

PRAI JP 1987-167689

19870707 <--

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AB Wastewater discharged from washing residual H<sub>2</sub>O<sub>2</sub> from tankers is mixed with catalase to decompose H<sub>2</sub>O<sub>2</sub>. The method decomps. H<sub>2</sub>O<sub>2</sub> to a level required by regulations without generating secondary pollution. Thus, 2600 L collected wash water from a H<sub>2</sub>O<sub>2</sub> tanker containing 4.55 weight% H<sub>2</sub>O<sub>2</sub> was mixed with 6 L of 100,000 unit/mL catalase. The H<sub>2</sub>O<sub>2</sub> decreased to 0.7 ppm after 1.5 h and was not detected after 3 h.

IC ICM C02F001-00  
ICS B63J004-00

CC 60-2 (Waste Treatment and Disposal)  
Section cross-reference(s): 7

ST hydrogen peroxide tanker wash water treatment; catalase hydrogen peroxide decompn wastewater

IT Wastewater treatment  
(enzymic, hydrogen peroxide removal by, from wash water from hydrogen peroxide tankers, catalase for)

IT 9001-05-2, Catalase  
RL: PROC (Process)  
(hydrogen peroxide removal with, from wash water from hydrogen peroxide tanker)

IT 7722-84-1, Hydrogen peroxide, uses and miscellaneous  
RL: REM (Removal or disposal); PROC (Process)  
(removal of, with catalase, from wash water of hydrogen peroxide tanker)

L62 ANSWER 34 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1986:39461 HCAPLUS Full-text

DN 104:39461

OREF 104:6375a,6378a

TI Cleaning of membranes in water purification

IN Koizumi, Motomu

PA Kurita Water Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	JP 60175504	A	19850909	JP 1984-32060	

198402

22

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JP 01031403 B 19890626  
PRAI JP 1984-32060 19840222 <--  
AB A reverse osmosis or ultrafiltration membrane is cleaned by treating with a H<sub>2</sub>O<sub>2</sub> solution containing a surfactant and then by treating with a solution containing catalase. Thus, a tap water was purified by activated C treatment, mixed-bed ion exchange, UV-disinfection, and ultrafiltration. The ultrafiltration membrane was rinsed with 0.5% H<sub>2</sub>O<sub>2</sub> solution after a 6-mo operation and then with 0.5% H<sub>2</sub>O<sub>2</sub> containing 1 mg catalase/L. The hydrostatic pressure was 0.46 kg/cm<sup>2</sup> and 0.38 kg/cm<sup>2</sup> before and after cleaning, resp.. The initial pressure for a new membrane was 0.3 kg/cm<sup>2</sup>.  
IC ICM B01D013-00  
CC 61-5 (Water)  
Section cross-reference(s): 48  
ST reverse osmosis membrane cleaning water; ultrafiltration membrane cleaning water; hydrogen peroxide membrane cleaning water; catalase soln membrane cleaning water  
IT Water purification  
(reverse osmosis, membrane for, cleaning of, hydrogen peroxide and hydrogen peroxide-catalase solution for)  
IT Water purification  
(ultrafiltration, membrane for, cleaning of, hydrogen peroxide and hydrogen peroxide-catalase solution for)  
IT 7722-84-1, uses and miscellaneous  
RL: USES (Uses)  
(for reverse osmosis and ultrafilter membrane cleaning)  
IT 9001-05-2  
RL: OCCU (Occurrence)  
(for reverse osmosis and ultrafiltration membrane cleaning)  
L62 ANSWER 35 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 1985:137349 HCAPLUS Full-text  
DN 102:137349  
OREF 102:21487a,21490a  
TI Quantitative addition of dissolved oxygen to in situ benthic chamber systems by use of catalase and hydrogen peroxide  
AU Hickey, Christopher W.  
CS Water Qual. Cent., Minist. Works and Dev., Hamilton, N. Z.  
SO Applied and Environmental Microbiology (1985), 49(2), 462-4  
CODEN: AEMIDF; ISSN: 0099-2240  
DT Journal  
LA English

AB A methodol. for reoxygenation of in situ benthic chamber systems by enzymic catalysis of H<sub>2</sub>O<sub>2</sub> with catalase [ 9001-05-2] was developed. For a 10-L benthic chamber, the injection of 1 mL of catalase suspension (26,000 U/mL) followed by 10 mL of 0.5 M H<sub>2</sub>O<sub>2</sub> solution resulted in complete reoxygenation within 2.5 min at 25°.

CC 61-1 (Water)

ST reoxygenation benthic chamber water study; catalase  
hydrogen peroxide reoxygenation benthic chamber

IT Water purification

(oxygenation, in benthic chambers, by catalase-  
hydrogen peroxide reaction)

IT 7722-84-1, biological studies

RL: BIOL (Biological study)

(catalase reaction with, benthic chamber reoxygenation  
by, for water studies)

IT 9001-05-2

RL: OCCU (Occurrence)

(hydrogen peroxide reaction with, benthic  
chamber reoxygenation by, for water studies)

IT 7782-44-7, analysis

RL: ANT (Analyte); ANST (Analytical study)

(uptake of, determination of, in benthic chamber, reoxygenation

for,

catalase-hydrogen peroxide reaction  
for)

L62 ANSWER 36 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1984:39001 HCAPLUS Full-text

DN 100:39001

OREF 100:5965a,5968a

TI Oxygenation by hydrogen peroxide of the fixed  
biomass used in biological water treatment

AU Roques, H.; Capdeville, B.; Seropian, J. C.; Grigoropoulou, H.

CS Dep. Genie Procedes Ind., INSA, Toulouse, 31077, Fr.

SO Water Research (1984), 18(1), 103-10

CODEN: WATRAG; ISSN: 0043-1354

DT Journal

LA French

AB Expts. were conducted in biol. disk and submerged reactor fixed biomass systems for wastewater treatment using H<sub>2</sub>O<sub>2</sub> to increase the O concentration dissolved in the liquid phase, thus increasing the active thickness of the biofilm. H<sub>2</sub>O<sub>2</sub> is very labile upon contact with aerobic microorganisms which produce catalase to dissociate H<sub>2</sub>O<sub>2</sub> into water and O. The results indicated that the purification capacity of the processes can be considerably improved but that a dissolved-O concentration >10-15 mg/L has inhibiting effects. Because a kilogram of O supplied by H<sub>2</sub>O<sub>2</sub> is more expensive than that

supplied by other forms of oxygenation, the actual use of H2O2 in fixed biomass systems should only be in specific cases, such as temporary doping of a temporarily overloaded plant and special applications avoiding large surface areas.

CC 60-1 (Waste Treatment and Disposal)  
 ST hydrogen peroxide biol wastewater treatment;  
 biomass fixed oxygenation wastewater treatment  
 IT Wastewater treatment  
 (biol., submerged bed in, hydrogen peroxide  
 oxygenation in)  
 IT Wastewater treatment  
 (biol. contactor, rotating disk, hydrogen  
 peroxide oxygenation in)  
 IT 7722-84-1, uses and miscellaneous  
 RL: USES (Uses)  
 (in oxygenation in fixed biomass wastewater treatment systems)

L62 ANSWER 37 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1983:407551 HCAPLUS Full-text

DN 99:7551

OREF 99:1305a,1308a

TI Decreasing the amount of dissolved oxygen contained in an aqueous fluid

IN Hitzman, Donald Oliver

PA Phillips Petroleum Co. , USA

SO Eur. Pat. Appl., 30 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	EP 71990	A2	19830216	EP 1982-107096	19820805
				<--	
	EP 71990	A3	19840808		
	EP 71990	B1	19900228		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	US 4414334	A	19831108	US 1981-291146	19810807
				<--	
	AU 8284206	A	19830210	AU 1982-84206	19820526

AU 532299	B2	19830922	<--	
JP 58056686	A	19830404	JP 1982-112463	198206 29
<--				
JP 63035237	B	19880714		
CA 1186257	A1	19850430	CA 1982-407543	198207 19
<--				
NO 8202615	A	19830208	NO 1982-2615	198207 30
<--				
NO 162249	B	19890821		
NO 162249	C	19891129		
AT 50598	T	19900315	AT 1982-107096	198208 05
<--				
DK 8203534	A	19830208	DK 1982-3534	198208 06

PRAI US 1981-291146 A 19810807 <--  
 EP 1982-107096 A 19820805 <--  
 AB O2 is removed from water and aqueous solns. and suspensions, e.g.,  
 polyacrylamide solns., beer, by reaction with an alc., e.g., MeOH,  
 with an alc. oxidase as the catalyst. Catalase may be added for  
 minimizing the H2O2 concentration  
 IC C12P001-00; C02F001-20; C12H001-00; C08J003-02; C09K007-02;  
 E21B043-22; E21B043-25  
 ICA C12N009-04; A23L002-34  
 CC 48-1 (Unit Operations and Processes)  
 Section cross-reference(s): 16  
 IT Water purification  
 (oxygen removal, by reaction with alc. with oxidase catalysts)  
 IT 9001-05-2  
 RL: USES (Uses)  
 (in oxygen removal, from water and solns. by reaction with alc.)

L62 ANSWER 38 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1976:498765 HCAPLUS Full-text  
 DN 85:98765  
 OREF 85:15775a,15778a  
 TI Flotation of sludge containing microorganisms using the

catalase activity (Peroxflot process)  
 IN Wolters, Norbert; Loll, Ulrich  
 PA Fed. Rep. Ger.  
 SO Ger. Offen., 5 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	DE 2446511	A1	19760415	DE 1974-2446511	197409 28

PRAI DE 1974-2446511 A 19740928 <--

AB Sludges from waste-water treatment are floated with O bubbles formed during the enzymatic splitting of H2O2 and fixed to the solid particles. Addition of H2O2 as a means of O supply can be used in the same process for aerobic stabilization. Initially, O is consumed by the bacteria for oxidation, the excess of H2O2 is used for the formation of O bubbles and flotation.

IC C02C

CC 60-1 (Sewage and Wastes)

Section cross-reference(s): 48

ST bacteria sludge flotation oxygen; hydrogen  
 peroxide enzymatic splitting; sludge wastewater flotation

IT Flotation

(of sludge, in waste-water treatment)

IT Waste water treatment

(sludge from, flotation of by oxygen from hydrogen peroxide)

IT 7782-44-7, uses and miscellaneous

RL: USES (Uses)

(in flotation, of sludge in waste-water treatment)

IT 7722-84-1, uses and miscellaneous

RL: USES (Uses)

(oxygen from, by enzymatic splitting for flotation of sludge in waste-water treatment)

L62 ANSWER 39 OF 39 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1916:3304 HCAPLUS Full-text

DN 10:3304

OREF 10:655b-c

TI The sterilization value of "Katacid" and the precipitation of  
 bacteria by ferric hydroxide

AU Kothner, P.  
 CS Univ. Marburg  
 SO Archiv fuer Experimentelle Pathologie und Pharmakologie ( 1915), 79, 118-37  
 CODEN: AEXPBL; ISSN: 0365-2041  
 DT Journal  
 LA Unavailable  
 AB Strauss's "Katacid" tablets, containing about 0.4 g. H2O2 , 0.53 g. citric acid and traces of catalase (absent in many prepns.) are not suitable for sterilizing drinking water. Better results are obtained by using a solution containing 2.5 g. citric acid, 0.379 g. FeCl3 and 1.0 g. Na2CO3.10H2O per l.  
 CC 14 (Water, Sewage, and Sanitation)  
 IT Water, purification  
 (sterilization)

=> d 159 1-4 bib abs hitind

L59 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2007:672358 HCAPLUS Full-text  
 DN 147:102324  
 TI Hypohalite-peroxide binary compositions and methods for sterilization and disinfection of surfaces and solutions, and production of potable water  
 IN Allen, Robert C.; Woodhead, Suzan; Becquerelle, Sophie  
 PA Binary, LLC, USA  
 SO PCT Int. Appl., 64pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	WO 2007070861	A1	20070621	WO 2006-US62124	20061214
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,				

IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

US 20070264355 A1 20071115 US 2006-611087

200612

14

PRAI US 2005-750764P P 20051214

AB The present invention relates to binary methods and compns. comprising hypohalite (preferably hypochlorite) and peroxide (preferably hydrogen peroxide) directed to the killing of pathogenic microbes such as parasites, bacteria, fungi, yeast, and prions, the oxidation of toxins, and the preparation of potable water. The binary methods and compns. extend the microbicidal potency of conventional hypochlorite by providing addnl. singlet mol. oxygen generated in situ, and offer more control over reactive chlorination exposure than hypochlorite alone. This combination is a highly effective disinfecting and decontaminating agent, capable of disinfection, detoxification, or deactivation of biol. contamination and many chemical toxins, facilitating the sterilizing of surfaces and solns., and the production of potable water. Thus, augmented microbicidal activity of the binary system sodium hypochlorite-hydrogen peroxide against Staphylococcus aureus was observed, as compared to any of the agents alone. The use of binary system of 0.03 mM NaOCl and 0.15 mM acidified peroxide gave up to 1.92 log10 CFU (84-fold) increase in kill when compared to equivalent levels of hypochlorite alone.

CC 63-8 (Pharmaceuticals)

Section cross-reference(s): 61

ST hypohalite hypochlorite hydrogen peroxide binary  
sterilization disinfection potable water

IT Water purification

(sterilization and disinfection; hypohalite-peroxide binary compns. and methods for sterilization and disinfection of surfaces and solns., and production of potable water)

IT 71-00-1, L-Histidine, biological studies 18472-51-0, Chlorhexidine gluconate 25655-41-8, Povidone iodine

RL: BUU (Biological use, unclassified); BIOL (Biological study);  
USES (Uses)

(comparison with; hypohalite-peroxide binary compns. and methods for sterilization and disinfection of surfaces and solns., and production of potable water)

IT 1313-60-6, Sodium peroxide 7681-52-9, Sodium hypochlorite 7722-84-1, Hydrogen peroxide, biological studies

RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); BIOL

(Biological study); PROC (Process); USES (Uses)  
(hypohalite-peroxide binary compns. and methods for sterilization  
and disinfection of surfaces and solns., and production of potable  
water)

IT 7772-98-7, Sodium thiosulfate 9001-05-2, Catalase  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(hypohalite-peroxide binary compns. and methods for sterilization  
and disinfection of surfaces and solns., and production of potable  
water)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2007:629768 HCAPLUS Full-text

DN 148:60819

TI Effects of hydroxyl radicals on introduced organisms of ship's  
ballast water based micro-gap discharge

AU Bai, Mindong; Zhang, Zhitao; Bai, Mindi; Yang, Bo; Bai, Xiyao  
CS Key Laboratory of Strong Electric-Field Ionization Discharge of  
Liaoning Province, Department of Physics, Dalian Maritime  
University, Dalian, 116026, Peop. Rep. China

SO Plasma Science & Technology (Hefei, China) (2007), 9(2), 206-210  
CODEN: PSTHC3; ISSN: 1009-0630

PB Chinese Academy of Sciences, Institute of Plasma Physics

DT Journal

LA English

AB With the phys. method of micro-gap gas discharge, OH· radicals were  
produced by the ionization of O2 in air and H2O in the gaseous state,  
to explore more effective method to treat the ship's ballast H2O.  
The surface morphol. of Al2O3 dielec. layer was analyzed using Atomic  
Force Microscopy (AFM), where the size of Al2O3 particles was in the  
range of 2 µm to 5 µm. At the same time, the biochem. effect of  
hydroxyl radicals on the introduced organisms and the quality of  
ship's ballast H2O were studied. The main reasons of cell death are  
lipid peroxide and damage of the antioxidant enzyme system in  
Catalase (CAT), Peroxidase (POD) and Superoxide dismutase (SOD). The  
quality of the ballast H2O was greatly improved.

CC 61-1 (Water)

ST hydroxyl radical effect organism ship ballast  
water

IT Enzymes, biological studies

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(antioxidant; effects of hydroxyl radicals on introduced  
organisms of ship's ballast water based  
micro-gap discharge)

IT Waters

(ballast; effects of hydroxyl radicals on introduced

organisms of ship's ballast water based  
micro-gap discharge)

IT Cell death  
Organisms  
Ships  
Surface structure  
(effects of hydroxyl radicals on introduced organisms of ship's  
ballast water based micro-gap discharge)

IT Peroxides, biological studies  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(lipid; effects of hydroxyl radicals on introduced organisms of  
ship's ballast water based micro-gap  
discharge)

IT Lipids, biological studies  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(peroxides; effects of hydroxyl radicals on introduced organisms  
of ship's ballast water based micro-gap  
discharge)

IT 3352-57-6, Hydroxyl radical, miscellaneous 9001-05-2,  
Catalase 9003-99-0, Peroxidase 9054-89-1, Superoxide  
dismutase  
RL: MSC (Miscellaneous)  
(effects of hydroxyl radicals on introduced organisms of ship's  
ballast water based micro-gap discharge)

IT 1344-28-1, Alumina, properties  
RL: PRP (Properties)  
(effects of hydroxyl radicals on introduced organisms of ship's  
ballast water based micro-gap discharge)

IT 7782-44-7, Oxygen, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(effects of hydroxyl radicals on introduced organisms of ship's  
ballast water based micro-gap discharge)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2006:522729 HCAPLUS Full-text  
DN 145:320578  
TI Treating ballast water with hydroxyl radical on  
introduced organisms  
AU Zhang, Zhitao; Bai, Mindi; Xiao, Yu; Bai, Mindong; Yang, Bo; Bai,  
Xiyao  
CS Key Laboratory of Strong Electric-Field Ionization Discharge of  
Liaoning Province, Environmental Engineering Institute, Dalian  
Maritime University, Dalian, 116026, Peop. Rep. China  
SO Chinese Journal of Oceanology and Limnology (2006), 24(2), 161-167  
CODEN: CJOLEO; ISSN: 0254-4059

PB Science Press  
 DT Journal  
 LA English  
 AB With phys. method of micro-gap gas discharge, a large amount of hydroxyl radical can be produced in 20t/h pilot-scale system using the ionization of O<sub>2</sub> and H<sub>2</sub>O. In this paper, the effect of biochem. of hydroxyl radicals on introduced organisms in ballast water was exptl. investigated. The results indicate that the contents of chlorophyll-a, chlorophyll-b, chlorophyll-c and carotenoid are decreased by 35%-64% within 8.0s and further to the lowest limit of test 5 min. In addition, the main reasons of cell death are the lipid peroxidn., the strong destruction to the monose, amylose, protein, DNA and RNA of cell, and damage in CAT, POD and SOD of antioxidant enzyme system.

CC 61-5 (Water)  
 Section cross-reference(s): 10

ST biochem hydroxyl radical microorganism ballast  
 water purifn

IT Waters  
 (ballast; effect of biochem. of hydroxyl radicals on  
 introduced organisms in ballast water  
 treatment)

IT Algae  
 Biochemistry  
 Eubacteria  
 Lipid peroxidation  
 Mass transfer  
 Phytoplankton  
 Ships  
 Temperature  
 Water purification  
 Zooplankton  
 (effect of biochem. of hydroxyl radicals on introduced organisms  
 in ballast water treatment)

IT Carbohydrates, biological studies  
 Carotenes, biological studies  
 Nucleic acids  
 Proteins  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (effect of biochem. of hydroxyl radicals on introduced organisms  
 in ballast water treatment)

IT Water purification  
 (sterilization and disinfection; effect of biochem. of hydroxyl  
 radicals on introduced organisms in ballast  
 water treatment)

IT 3352-57-6, Hydroxyl radical, biological studies  
 RL: ADV (Adverse effect, including toxicity); MOA (Modifier or

additive use); BIOL (Biological study); USES (Uses)  
(effect of biochem. of hydroxyl radicals on introduced organisms  
in ballast water treatment)

IT 50-99-7, Glucose, biological studies 479-61-8, Chlorophyll-a  
519-62-0, Chlorophyll-b 542-78-9, Malondialdehyde  
9001-05-2, Catalase 9003-99-0, Peroxidase  
9054-89-1, Superoxide dismutase 11003-45-5, Chlorophyll c  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(effect of biochem. of hydroxyl radicals on introduced organisms  
in ballast water treatment)

IT 7782-44-7, Oxygen, occurrence 12408-02-5, Hydrogen ion, occurrence  
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)  
(effect of biochem. of hydroxyl radicals on introduced organisms  
in ballast water treatment)

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2006:101276 HCAPLUS Full-text  
DN 144:156118  
TI Method for treating ship ballast water  
IN Waka, Yoshiharu; Tabuchi, Takuro; Mizumori, Takashi  
PA Katayama Chemical Inc., Japan  
SO PCT Int. Appl., 23 pp.  
CODEN: PIXXD2  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	WO 2006011315	A1	20060202	WO 2005-JP11167	200506 17
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
AU	2005256100	A1	20060302	AU 2005-256100	

200506  
17

EP 1671932                      A1      20060621                      EP 2005-751319

200506  
17

R:    AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
      PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
      PL, SK, BA, HR, IS, YU

US 20060289364                      A1      20061228                      US 2006-567682

200602  
09

PRAI JP 2004-224403                      A      20040730  
      JP 2004-242422                      A      20040823  
      WO 2005-JP11167                      W      20050617

AB    A method for treating ship ballast H2O, comprises adding, to ship ballast H2O, H2O2 or a H2O2 generating compound in such an amount that gives a H2O2 concentration of 10-500 mg/L and ≥1 member selected from a ferrous ion or a ferrous ion supply compound in such an amount that gives ferrous ion concentration of 0.1-400 mg/L, catalase in such an amount that gives a catalase concentration of 0.5-2500 units/L, and I or an I supply compound in such an amount that gives an I concentration of 0.1-100 mg/L, thereby exterminating organisms in the ballast H2O.

IC    ICM C02F001-50  
      ICS B63B013-00; C02F001-72; C02F001-76

CC    61-5 (Water)

ST    ship ballast water purifn organism  
      catalase iodine

IT    Water purification  
      (biofouling control; method for treating ship ballast water)

IT    Ships  
      Water purification  
      (method for treating ship ballast water)

IT    79-21-0, Peroxy acetic acid 7553-56-2,  
      Iodine, uses 7681-11-0, Potassium iodide  
      , uses 7720-78-7, Ferrous sulfate 7722-84-1,  
      Hydrogen peroxide, uses 9001-05-2,  
      Catalase  
      RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
      (method for treating ship ballast water)

RE.CNT 10      THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
                 ALL CITATIONS AVAILABLE IN THE RE FORMAT